

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

Published every Thursday Morning by David Williams Co., 232-238 William St., New York.

Vol. 69: No. 14

New York, Thursday, April 3, 1902.

\$5.00 a Year, including Postage.  
Single Copies, Ten Cents.

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# THE IRON AGE

THURSDAY, APRIL 3, 1902.

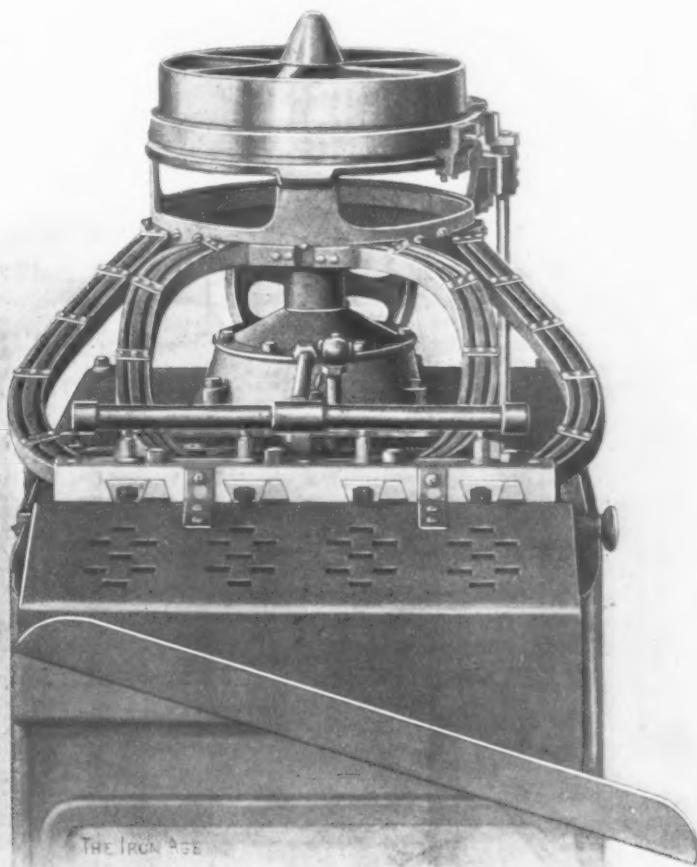
## The Acme Automatic Nut Tapping and Bolt Cutting Machines.

We here illustrate two interesting and valuable machines designed and built by the Acme Machinery Company of Cleveland, Ohio. Both are shown in perspective and sectional elevations. The bed of the automatic nut tapper is made in box form and incloses the principal parts of the working mechanism. The feeding mech-

tapping spindles. When the machine is running in the direction that sends these tapping spindles slowly upward the taps will be running into the nuts. When the belt shifts and the machine reverses it doubles its speed as the taps run back out of the nuts. This cycle of running up and down completes the tapping of four nuts.

These movements are accomplished by the pulleys D E, mounted on the shaft K.

The tap spindles are tool steel, ground, running in hardened and ground tool steel bearings, and the lead



THE ACME AUTOMATIC NUT TAPPING MACHINE.

ism is placed outside and on top of the box bed to render it easy of access to the operator. The working mechanism being placed inside of the bed away from the point where the tapping lubricant is applied, prevents the oil, or other lubricant used while tapping nuts, from being thrown on the working parts.

The tapping is accomplished by four vertical spindles, Figs. 1 and 3, driven by gearing. This gearing is through the driven shaft K, Fig. 2, by bevel gears to the vertical shaft F, and then to the spindle G, which carries the tap H. In the ordinary nut tappers constructed by this company the taps run downward into the nut, forced by the weight of the spindle. In this machine the taps run upward into the nuts, guided by lead screws running in pairs of split nuts at the lower ends of the

screws and split nuts are tool steel. These latter are placed in a very ingenious case at the bottom of the spindles, so that in case it becomes necessary to take them out, by loosening a set screw the whole case may be reversed, so that the fastening screws at the back of the case may be as readily reached as those at the front. All the gears are cut from the solid, and all bearings are tool steel and bronze. The nut holders, nut chutes and feeding mechanism for each size of nut are all made upon one single plate, so that by loosening two nuts the particular plate may be withdrawn and another substituted, thus making a change from one size to another easily and quickly accomplished. The lubricant is supplied directly on to the taps through flexible tubes, and the chips are washed down into the interior of the bed,

where they are received in a pan having a screen bottom, and are thus separated from the lubricant, which flows into the bottom of the bed, which forms a reservoir. A suitable pump can be furnished where the circulating system is not used. The pan with the chips may be removed and emptied at convenience.

The taps used in the machine are of the most simple form, and can be made at much less cost than the ordinary nut taps. Just inside of a small door at the left hand top of the machine is placed adjusting mechanism for regulating the cycle of the machine—that is, the

lower end of the nut chutes is the mechanism that pushes the nuts to the taps and ejects them after they have been tapped. Right at this point is located means for relieving the nut feed in case that a ragged nut or a piece of scrap gets in the way of the nut feeding mechanism; this relief is constructed so that if any obstruction gets in the way the mechanism automatically throws itself out of gear—that is, out of gear in relation to the particular chute obstructed, so that there is no danger whatever of breakage.

The machine is furnished with another relief to pre-

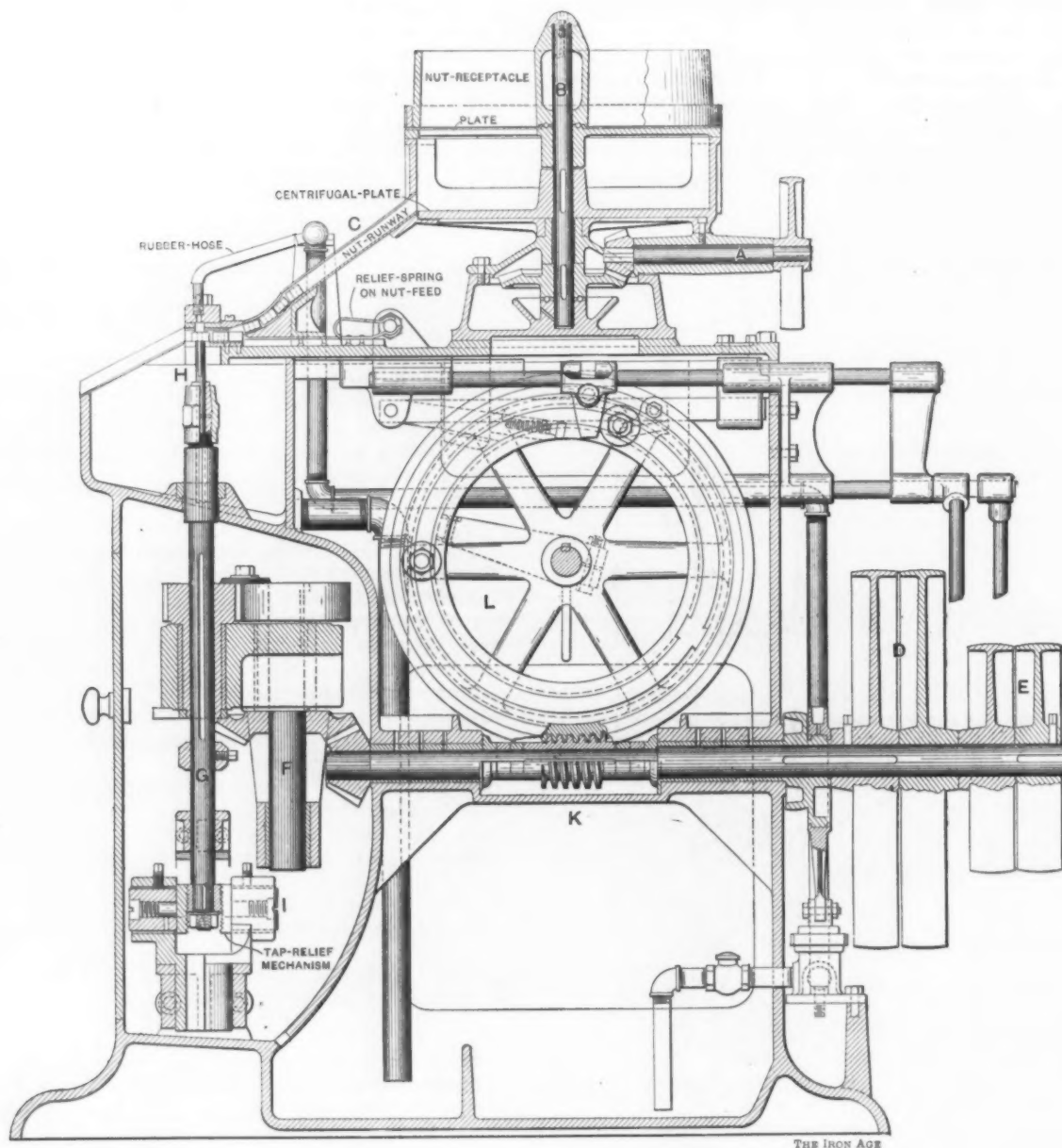


Fig. 2.—Sectional Elevation at Right Angles to Fig. 3.

#### THE ACME AUTOMATIC NUT TAPPING MACHINE.

machine can be regulated to drive the taps to just the required depth before reversing.

##### Operation.

The nuts are placed in the circular receptacle at the extreme top of the machine; this is divided into a series of cells by radiating webs comparable to the spokes of a wheel. The plate that makes the bottom of this receptacle has a hole in it just the size of one of these cells; the machine turns this nut receptacle slowly so that at intervals one single cell full of nuts is discharged on the revolving plate below. The centrifugal force developed by this revolving plate carries the nuts to the outer edge of the plate, where they find their way into the four nut chutes that lead to the taps. Just under the

vent breakage of the taps. For instance, an obstruction may present itself to any one of the traps, such as a blank nut—that is, a nut without any hole in it. In this case the split nuts that hold the lead screws at the bottom of the spindles (shown at I in Fig. 2), being held in position by spring pressure only, begin to travel downward as soon as the taps reach the obstruction, thus relieving the particular spindle of the necessity of traveling upward. This at once prevents any possibility of breakage. This nut feed relief and tap relief are both entirely automatic; the moment the defective nut has passed on, forced out of position by the oncoming nut, or the moment the obstruction has been removed by the attendant, the machine at once brings the mechanism automatically to its proper position to go on tapping. When



the tapped nuts are ejected by the machine they find their way across the drainage plate into the discharge pipes that take them into a convenient receptacle. The discharge pipes may be reversed on their common centers so as to discharge the tapped nuts either side of the machine at will.

The machine will tap nuts from 5-16 to  $\frac{1}{2}$  inch, inclusive, at the rate of 16,000  $\frac{3}{8}$ -inch nuts in ten hours.

#### Automatic Bolt Cutter.

The automatic bolt cutter shown in Figs. 4, 5 and 6 is also made with a bed of box form, in which the work-

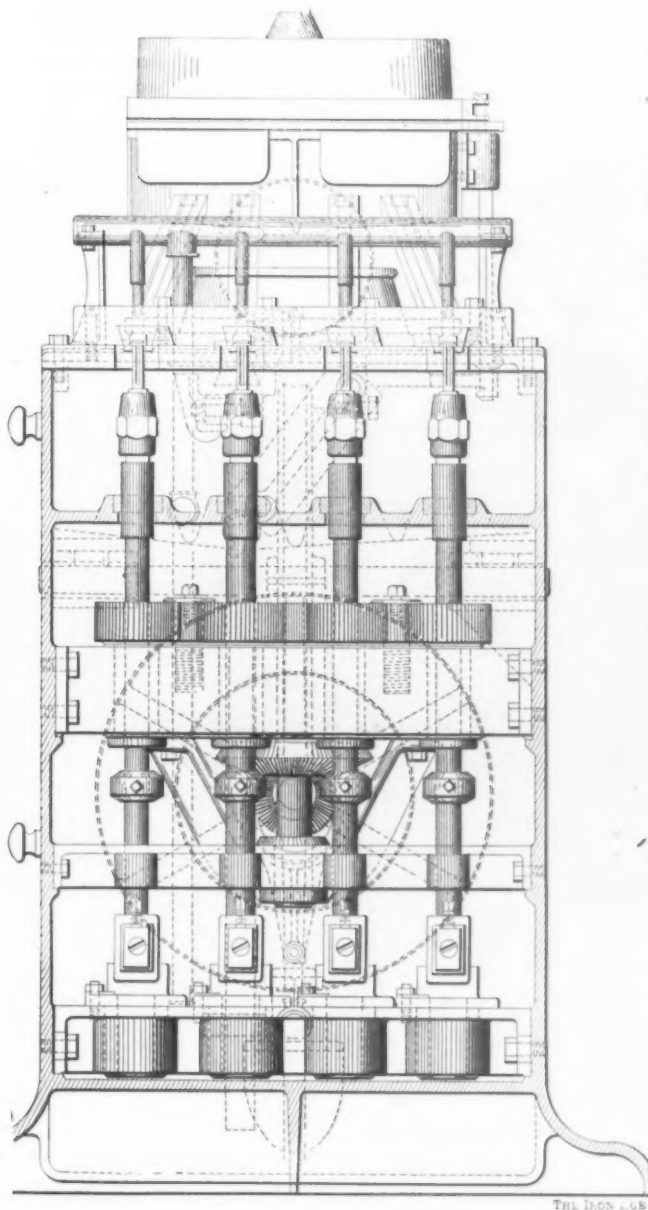


Fig. 3.—Sectional Elevation.

#### THE ACME AUTOMATIC NUT TAPPING MACHINE.

ing parts are inclosed. The threading is accomplished by two vertical spindles, G, driven through H E by the pulleys D C, as in the first machine. These spindles are guided by lead screws running in pairs of split nuts at their lower ends. When the machine is running in the direction which sends the threading spindles slowly upward, the die heads on these spindles are threading the bolts; when the belt shifts and the machine reverses, it doubles its speed as the die heads run back off the bolts. This cycle of running up and down completes the threading of two bolts. The spindles can be readily reversed as in the nut tapper.

The machine is furnished with clamping devices or vises that hold the bolts when they are being threaded.

The lubricant is supplied directly onto the die heads through the flexible tubes and the chips are washed down into the interior of the bed, where they are received in a pan.

The die heads and dies used in the machine are of very simple construction, of the type known as solid adjustable. Inside of the doors of the machine, convenient of access, is the mechanism for regulating the cycle of the machine—that is, the machine can be regulated to cut the required length of thread.

#### Operation.

The bolts are placed in a hopper at the top of the machine. The machine automatically arranges these bolts in two runways, one on each side of the machine, where they hang by their heads. This runway is inclined at such an angle that by their own weight the bolts feed down into the machine. The bolts hanging at the extreme lower end of the runways are pushed by suitable mechanism to and into the vises. The vises close on the bolts automatically just after the bolts have centered themselves over the die heads. The feeding mechanism immediately records and takes the next two bolts at the lower end of the runways and bring them forward just in time to eject the two bolts just threaded; at the same time it places two more for threading.

As in the other machine, the feeding mechanism is thrown out automatically in case a ragged bolt or piece of scrap gets in the way, and there is also a die head relief. The machine will cut 5-16 to  $\frac{1}{2}$  inch by 4-inch bolts, inclusive, at the rate of 8000  $\frac{3}{8}$ -inch bolts in ten hours. Bolts with any kind of heads except T-heads can be cut—the latter cannot be retained in the runways.

**The National Bridge Company.**—The report in the Pittsburgh papers to the effect that the National Bridge Company of Pennsylvania, with offices in the Fitzsimons Building, Pittsburgh, and who propose to build a large bridge and structural plant at Monaca, on the Pittsburgh & Lake Erie Railroad, had abandoned this project permanently, is incorrect. The facts are that a large block of stock in the new company is held by executors representing an estate, and, owing to a recent death, this money, amounting to about \$500,000, has been held up until necessary legal formalities can be gone through. It has, therefore, been decided to temporarily suspend operations and keep expenses at a minimum until this money has been released by the courts and is available. The officers of this concern state that work on the building of this plant will be pushed as fast as possible just as soon as these legal steps have been taken. E. M. Schofield, for some years with the American Bridge Company, at Youngstown, is at the head of this new concern.

H. B. Underwood & Co., Philadelphia, Pa., have successfully performed an interesting piece of work on the furnace blowing engines of the Saxton Furnace Company, Saxton, Pa. The journals of two of their heavy blowing engines had become badly worn and required returning or truing up. These journals are 20 inches in diameter and 26 inches in length, and to avoid dismantling the whole engine and consuming a long time, it was decided to support the weight of the shaft, fly wheel, connecting rods, &c., weighing in all about 11 tons, intact. Substantial temporary bearings were made, and the unworn part of the shaft was run in them alongside of the journals. To these then was fastened a special sliding tool holder which carried the cutting tool, and the operation of turning was performed by revolving the shaft by means of the engine itself and by its own steam. They are also boring out the 50-inch steam cylinder of these engines, repacking same and refitting the pedestals.

The Compulsory Industrial Arbitration Court, whose membership includes representatives of employers and employees, which was recently established in Australia, will open this month. Its operation will be watched with interest.

### Two Daniels Come to Judgment.

It is sometimes useful to know how we appear to others in kindred pursuits, and if the observer is fair minded and without bias we may learn just where our faults and weaknesses lie. A member of the Amalgamated Society of Engineers, England, has written to his secretary in the home office upon the relative capacities of English and American machinists, and the writer of the letter says that it can be answered in the affirmative and the negative; they do work harder and they don't in this country than in England, and he proceeds to make a fine distinction in explanation of his answer. He says: "When one speaks of American workmen working harder than English mechanics one speaks of what I term sledge hammer mechanics, and these are very numerous. Men who never served

and file until they get good pay in; then they quit and are off on a spree. In my opinion the success of America does not lie so much with the workmen as the machinery and appliances; there is more work done here with machinery and electricity than in the old country; that is why everything seems faster.

"As regards wages they are certainly higher than in England. Where I am the rate is \$2.75 to \$3 per day for good workmen, but the hammer and chisel men get only \$1.60 to \$2 per day. While wages are higher the cost of living is also higher. You cannot get a decent house under \$250 to \$300 per year, but there is no denying that they are very fine in all their appointments, having bathrooms, laundries, cellars, dining rooms, parlors, &c., but the rent is fabulous. Everything else is higher, and I know Englishmen who have been here 20 years who say they are no bet-

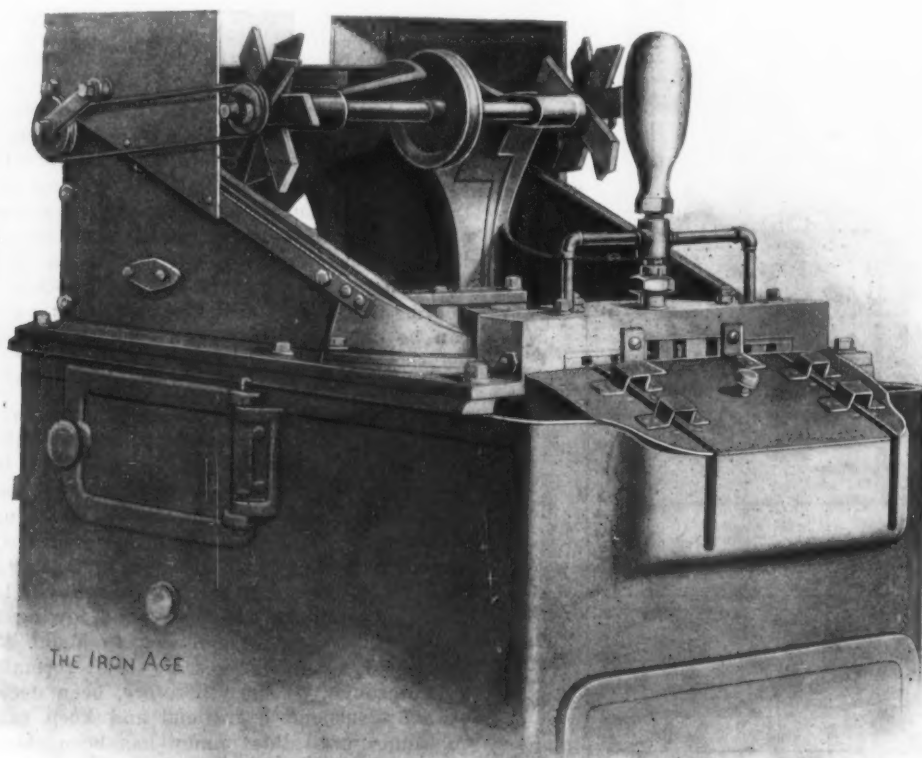


Fig. 4.

THE ACME AUTOMATIC BOLT CUTTER.

a minute at the trade hire themselves as machinists. They know very well the use of a hammer and chisel, have a little knowledge of the file (which has been gained while they have been laboring), and with such knowledge set about doing a job. There is a lot of bustle about these men and this tells in America. If with their hammer, chisel and file they manage to make a fit all is well; if they do not all is well; they go on trying another job until they do make a job. This class would not live five minutes in an English shop. But when one speaks of the American mechanic one speaks of a man who knows his business and its importance. This man is no faster, if as fast, as the British workman; but take it from me with my short experience that America turns out very few such men. If by chance a good fellow is turned out, then he works at about the same rate as his English comrade. All this fuss about the Americans working harder than the Britisher is humbug. The Americans are as fond of a loafing job as any Britisher. The steady, quiet plodding man belongs to the latter class, and not to the bustling workmen, who handle the hammer and chisel

ter off than they would have been if they had remained at home."

There is much more of similar purport in the letter referred to, but it is unnecessary to quote it, for the writer confesses that his experience in this country has been very short, and he will possibly understand us better after he has been with us a little longer. Another English workman, however, has been here, upon a brief visit apparently, and it is amusing to note that his experiences have been exactly opposite to those previously set forth. He finds, to quote him literally, "the greatest animation prevailed everywhere; even the working classes, who are so leisurely in their movements in the old country, seemed to be imbued with a quicker and more energetic spirit. Their attempts to enjoy themselves suggested the harsh industrial conditions under which they labored. I could not disabuse myself of the fact (?) that everything I saw was intensely superficial and destined to give way ere long to things of a more lasting and rational character."

This is quite in line with what has been so frequently adverted to in *The Iron Age*—to wit, that Eng-



lishmen do not in the least understand us from a political or industrial aspect; this writer calls his hasty generalizations "facts," and predicts the speedy lapse of American manners and customs into the only ways of living he is familiar with—those of England. We are somewhat acquainted with them ourselves, but prefer our own, after a protracted trial of others. But the second Daniel come to judge us has some further observations to make. He says: "The working classes in the United States have no pleasures, and no leisure to enjoy them if they had, the result being that they are somewhat prosaic beings."

We must admit the truth of this in so far as what constitutes "pleasure" from the British point of view;

arrangements are unknown, or else practically ignored. The machinery is certainly more advanced than that used in the old country, though not to the extent that is claimed for it, and, "personally, I cannot see such a great difference between a well equipped English shop and an American one. The only thing I did notice was that the workmen apparently worked harder than we do (the other Daniel said we didn't) and that there was plenty of young blood and but very little of the old in the shops, and I could not help reflecting upon the pathos which its absence suggested."

This is obscure, but the observer evidently meant to say that it was pathetic that men should outlive their usefulness. So it is, but not more so in the case of a

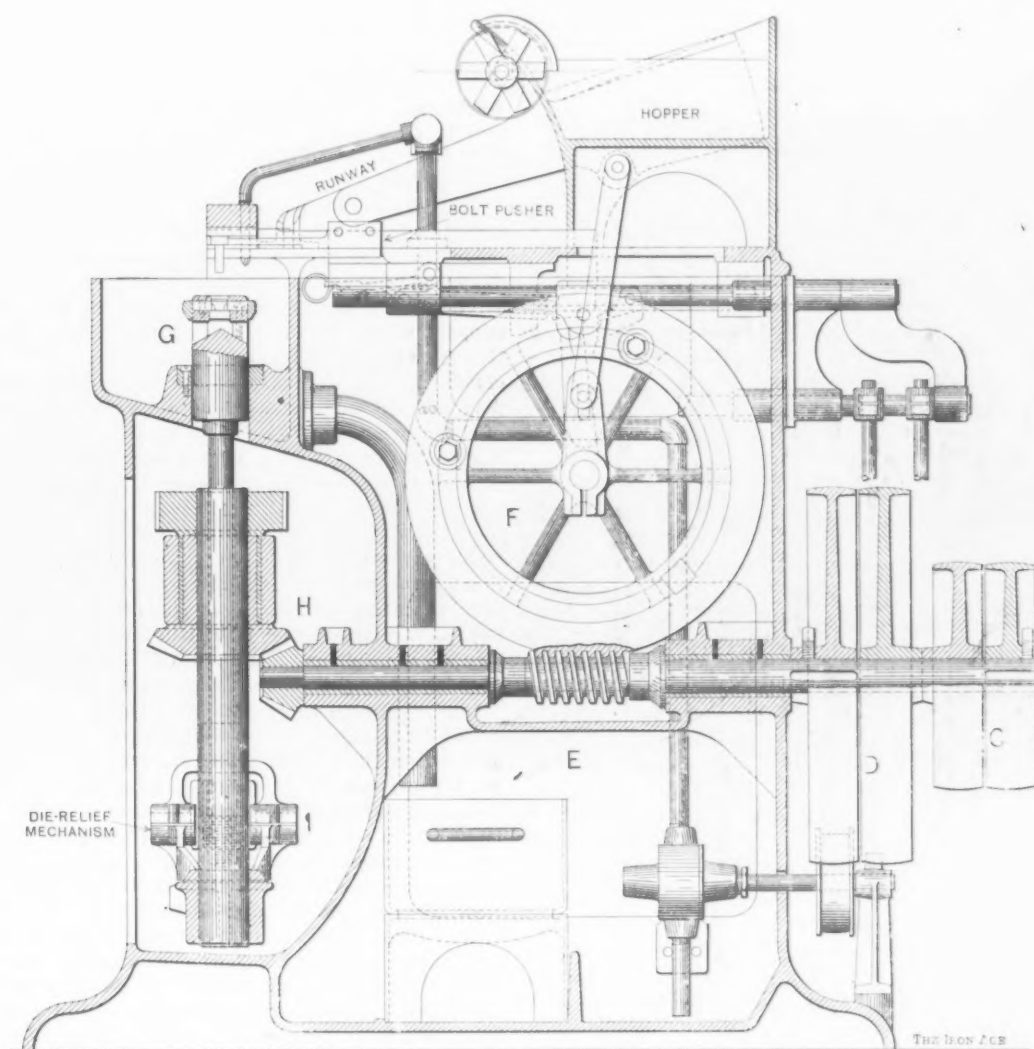


Fig. 5.—Sectional Elevation at Right Angles to Fig. 6.

#### THE ACME AUTOMATIC BOLT CUTTER.

we do not stop work after enough has been earned to provide a scanty living for the family in order to course greyhounds, or kick footballs over 40-acre lots, for the reason that we do not see any especial pleasure in the fact that one dog can run faster than another dog, or that anything has been gained by his having done so. Also, we are prosaic in keeping to work while we are young in order that we and those dependent upon us may have, at least, a roof over our heads long before we get old. The word "leisure" strikes us as facetious in this connection. We have all that there is of that commodity, for that is exactly what it is. There is no leisure for any one in this life unless it is bought and paid for by some one.

Our critic has some favorable remarks to make concerning the shops, saying that they are warm in winter and cool in summer, and in this respect, if no other, are a vast improvement upon British shops, where such

shop than in any other department of human endeavor. Although men may continue to serve after middle life, yet their efforts are not those of younger workmen who have their lives before them, and unless we are willing to admit that shops are charitable institutions we must concede that employers are justified in filling their shops with young men. This Daniel II was also greatly impressed with the fact, as he calls it, that everywhere he went the managers, foremen and other responsible officials were either Scotch or English, and they were "jostling to the front." Perhaps he was misled by the names of these jostlers, for we have a great many undeniably Scotch names in our shops; but it is anomalous that they had to come 3000 miles for work when, if they had jostled to anything like the same extent they seem to here they could have had cheaper house rent and all the luxuries it is possible to obtain in England upon a wage of "twa pun a

week." After all, this writer from whom we have quoted seems to touch the root of the disturbances between labor and capital in his country, for he says: "With English trade unions co-operating with English capital there is no power on earth that can approximate to us (England) in energy and enterprise. Contrasted with English institutions they (we) are a long way in the rear. Certainly there are some cities that boast of universities and polytechnics, but they are not nearly so abundant as they are in our country. I visited several of them and was surprised that so few patronized them. Having no leisure, the people have little or no inclination for the higher arts of life. Work, work, work is the great passion of America."

Now if this commentator could devise some way by which the trades unions would confine themselves to their own side of the machine business and not at-

tempt to run both ends of it—the shop and the administration—he would confer a great favor upon all manufacturers everywhere. It is not likely that he can, but will continue to run over here, he and his congeners, and tell us how we could run American shops to the greater satisfaction of English workmen.

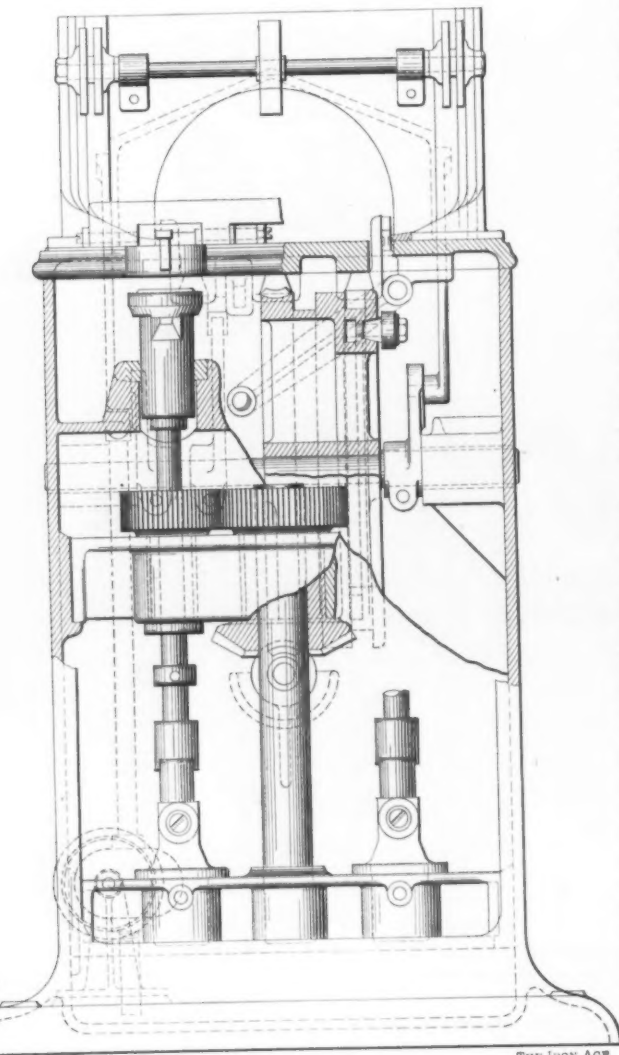


Fig. 6.—Sectional Elevation.

#### THE ACME AUTOMATIC BOLT CUTTER.

A conference looking to more harmonious relations between employers and workmen took place in England lately, the parties being the Employers' Federation and three of the leading unions, but the stipulations proposed by the Employers' Federation were promptly rejected by the workmen. The proposition made to them was that the employers should not be interfered with in the management of their business in any way; removal of all restriction as to output and

### The Babcock Bill Dead.

WASHINGTON, D. C., April 1, 1902.—There has recently been a revival of interest in Congress concerning the so-called Babcock bill providing important reductions in the rates of duty on the metal schedule of the tariff law; but at the same time an interesting parliamentary development has occurred which the most experienced observers here confidently believe will effectually dispose of this measure so far, at least, as the present session of Congress is concerned.

Readers of *The Iron Age* will remember that early in the present session a strong effort was made by Representative Babcock to secure a favorable report from the Ways and Means Committee on his bill, and that this attempt very nearly succeeded through the unexpected support which Mr. Babcock received from Representative Tawney of Minnesota, who voted with the Wisconsin member in favor of the bill. The motion to report the bill was defeated by a tie vote in the absence of Representative Long of Kansas, who was credited with leanings toward a very moderate tariff. Upon returning to Washington, however, Mr. Long made a very positive statement that he would not support the Babcock bill.

Since the above incident, the Cuban reciprocity question has occupied the attention of the Ways and Means Committee to the exclusion of all other topics, and Representatives Babcock, Tawney and Metcalf of California, Republican members of the committee, have been classed with the so-called "insurgents," who have strongly opposed the administration's policy involving a cut of 20 per cent. in the duties on Cuban products imported into the United States. During the discussion of the Cuban reciprocity question, however, the Ways and Means Committee and many other members of the House have received memorials in favor of the Babcock bill from various firms in the East and West, and, especially, from the so-called Manufacturers' Association of New York. This association has been very active in working up sentiment in favor of the bill and recently appointed a special committee to examine the measure and prepare a report thereon. Copies of this report to the number of several hundred have been circulated in both houses of Congress and a number of copies have been formally introduced, spread upon the records and referred to the Ways and Means Committee. This report as presented in Congress is as follows:

"Your committee, to whom was referred the H. R. 9056 of the Fifty-seventh Congress, first session (known as the Babcock bill) would report that this bill is a modification of the H. R. bill 14,145 of the Fifty-sixth Congress, second session, and that it reduces the present custom duties on nearly all varieties of the crude shapes of iron and steel an average of 50 per cent., and adds to the free list more advanced than pig and less advanced than bar and all ingots, beams, channels, plates, tee rails, &c. (which are generally regarded as the steel and trust products).

"The bill will, we believe, protect the wage prices of the capable mechanics and assist the manufacturers of the United States in the attempt to obtain and retain the market for our surplus goods of the higher grades, and continue here the era of good times when all who honestly want work may have it at prices better than anywhere else in the world.

"While we do not believe that the product of any organization would be selected for a reduction of their legitimate profits, yet, when one company control the market of the United States and are able to declare prof-



its by reason of the protection custom duties in excess of the amount considered legitimate in business experience, the time has come when those duties should be gradually lowered at such a rate that other lines of business depending on the products on which the duties are lowered may not be thrown into confusion.

"Your committee, when the previous bill was referred to them, held an open meeting to hear the interested members, but, as previously stated, there was a very small attendance, considering the importance of the subject, and the opinion of your committee then formed after a discussion applies to this bill, and we would offer the following:

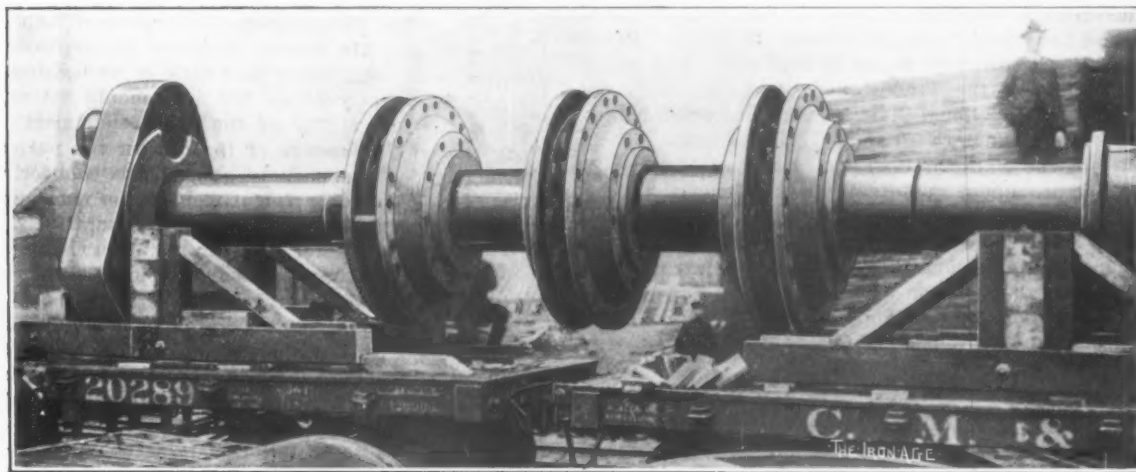
"Resolved, That the Manufacturers' Association of New York favors the passage of the present H. R. 9056 (known as the Babcock bill), believing that the interests of the manufacturers of the country, as well as the workmen, will be advanced by this modification of the tariff bill of 1897, particularly if it will assist in the work of reciprocity to which this association stands committed."

Representative Babcock, in the meantime, had planned to summon a caucus of Republican members of the House and endeavor to have his bill adopted as a party measure. As a means to this end he had secured the co-operation of 50 to 60 members, the personnel of

### Large Shaft Built by the Allis-Chalmers Company.

An illustration is herewith given of a notable shipment recently made by the Allis-Chalmers Company from their works at Milwaukee, Wis. It consists of a steel shaft 30 inches in diameter and 34 feet long, with its fittings. The shaft is hollow forged, with a 10-inch hole, and was finished and fitted at the E. P. Allis Works for use in one of the plants of the American Steel & Wire Company, at Cleveland, Ohio. The actual shipping weight of the shaft is 78 tons. It is intended for a 40 and 80 by 60 combined vertical and horizontal Reynolds rolling mill engine, carrying a rope wheel 23 feet in diameter by 18 feet face. The weight of the wheel is about 138 tons. The total weight of the finished engine is about 500 tons.

**The Mannesmann Cycle Tube Works Sold.**—On Wednesday last the Benedict & Burnham Mfg. Company of Waterbury, Conn., purchased through James D. Williams of New York and Hugh L. Thompson, engineer, of Waterbury, Conn., the tube making machinery, licenses, shop right and patents owned by the Mannes-



LARGE SHAFT BUILT BY THE ALLIS-CHALMERS COMPANY.

his following being practically the same as that combined in opposition to the Cuban reciprocity programme, the theory of this combination being that the tariff should not be reduced on American agricultural products so long as it was permitted to stand untouched on such lines of manufactures as are largely monopolized by industrial combinations. Mr. Babcock's crusade was generally admitted to be making some progress when about two months ago he was taken seriously ill and so compelled to abandon all his work in the House. He is now convalescent, but feeling somewhat discouraged over the outlook for the success of his measure he has espoused the cause of the administration concerning reciprocity with Cuba.

This step on Mr. Babcock's part has had very important results, having alienated the entire support for his bill he had built up both in the Ways and Means Committee and in the House among those representatives who had opposed Cuban reciprocity. It would be difficult to overstate the bitterness that has been engendered between the two wings of the Republican party in the House, which for four months have been engaged in a struggle over the reciprocity question, and Mr. Babcock's defection has made a very deep impression on those who had promised to support his bill and who had confidently counted upon his assistance in defeating the reciprocity programme. At this writing it is doubtful if Mr. Babcock could command a score of Republican votes for his bill, and, although his shrewdness and activity are generally recognized, it is the best opinion that the measure has been disposed of for the present session at least.

W. L. C.

mann Cycle Tube Works of Zylonite, Town of Adams, Mass. The company were organized some time in 1896 by the Mannesmann Brothers—Max, Rheinhardt and Alfred—the sons of the inventor of the Mannesmann process and machines. Through some misfortune or mismanagement the project failed and the Mannesmanns gave up in August, 1898, without having successfully started the works. The plant was then leased to responsible people, who ran a part of it from November, 1898, to some time in May, 1899, in which time they produced about 450,000 lineal feet of merchantable bicycle tubing. Since that time the works have been idle, and the property was finally sold by order of the District Court of the United States for the Southern district of New York. The tube machinery will be removed and the property used for manufacturing purposes.

The improvements for the year 1902 projected by the railroads in the Shenango Valley are extensive. They are principally in the line of curve elimination and the laying of extra track and switches. The effort for higher speed and more frequent trains will be advanced steadily. Lower passenger fares between Youngstown, New Castle and Sharon are already a fact, on account of the electric railway competition, and with the largely increased travel sure to result the three cities are expected to be drawn closer together in a financial and social way and faster growth to result. The double tracking and improvement of the electric railways is resulting in better speed and increased traffic in and about Sharon.

## The Department of Commerce and Labor.

WASHINGTON, D. C., April 1, 1902.—The House Committee on Interstate and Foreign Commerce has begun a series of hearings on the pending bills authorizing the creation of a new executive department to be devoted to the interests of commerce. There are four of these bills before the committee, including the Nelson bill, recently passed by the Senate, which creates a Department of Commerce and Labor, and measures presented by Representatives Roberts of Massachusetts, Brownlow of Tennessee and Schirm of Maryland. From a parliamentary standpoint it is practicable for the committee either to report the Nelson bill or to substitute for it one of the House measures which, if satisfactory, might be accepted by the Senate in the event of its passage by the House.

The strength of the proposition that a Department of Commerce should be created was made clear to the committee at the beginning of the hearings by the number and character of the representatives of commercial organizations in various parts of the country, who were present for the purpose of advocating the pending bills. They included President Theodore C. Search and Secretaries E. H. Sanborn and E. P. Wilson of the National Manufacturers' Association, John W. Ela of the National Business League of Chicago, Edward R. Wood of Philadelphia, of the National Board of Trade; M. H. Kline of Philadelphia, of the Trades' League; L. W. Noyes of Chicago, of the National Civic League; George H. Anderson of the Pittsburgh Chamber of Commerce, W. R. Tucker of the National Board of Trade and George H. Barber, a prominent manufacturer of Detroit.

At the suggestion of Chairman Hepburn it was decided to treat the question before the committee under a different head at each meeting, the first hearing to be given up to a discussion of the necessity for and the general functions of the proposed new department, the organization of the department and its *personnel*, &c., to be discussed at subsequent sessions.

### President Search on the Nelson Bill.

President Search, who was the first speaker, strongly advocated the acceptance by the House Committee of the Nelson bill chiefly on the ground that it was as satisfactory a measure as any of the others, and possessed the advantage of having passed the Senate. Any necessary amendments, he thought, might be incorporated in the bill without changing its general character and the prospects of its ultimate passage would thereby be improved. Concerning the necessity of a department to be devoted to the interests of commerce, Mr. Search made a striking comparison between the manufacturing interests of the country, which are not represented by an executive department, and those of agriculture, which are now supervised by a Cabinet official.

"The twelfth census," he said, "shows that the aggregate value of the products of the manufacturing establishments of the United States during the census year ended June 1, 1900, exceed \$13,000,000,000, which is probably nearly four times the aggregate value of all the products of agriculture during the same year. The manufacturing interests of the United States exceed in volume and importance the industrial interests of any nation in the world, and yet there is in the executive departments of this Government no department or bureau that is specially charged with any duties relating directly to these interests. Agriculture, labor, transportation, mining, fisheries and forestry all have distinct recognition in one form or another, but nowhere is there any agency specifically designed to promote the welfare of the manufacturing interests of the country.

"The United States is almost alone among the civilized nations in failing to maintain a distinct governmental department whose function it is to promote the interests of commerce and industry. England has her Board of Trade, which exercises a powerful influence upon the commerce and industries of Great Britain, and whose president is a Cabinet officer. Germany has a

Minister of Commerce. France has a Minister of Commerce. Belgium has a Minister of Industry and Labor. Austria has a Minister of Commerce and National Economy. Hungary has a Minister of Industry and Commerce. Russia has a special Imperial Cabinet of four sections, one of which is devoted to agriculture and manufacture. The Netherlands has a Minister of Public Works and Commerce. Spain has a Minister of Agriculture and Commerce and Public Works. Portugal has a Minister of Public Works and Industry and Commerce. Switzerland has a Minister of Agriculture and Industry. Italy has a Minister of Agriculture and Commerce. Persia has a Minister of Commerce. Most of the Spanish-American countries have Cabinet officials whose functions are distinctly commercial in character."

In conclusion, Mr. Search urged that while the purpose of the bills would really justify a very large expenditure on the part of the Government, the Nelson bill involved an appropriation of only about \$50,000 per year, as the new department would be made up almost exclusively of bureaus transferred from other executive branches.

### The Attitude of Organized Labor.

Mr. Ela strongly advocated the creation of the new department, and when examined as to the attitude of organized labor with regard to it, he said that the Knights of Labor favored the Nelson bill, under which the labor bureau would be incorporated in the new department, while the American Federation of Labor was opposed to it. He wished, however, to emphasize the fact that this controversy had little or no bearing upon the general purpose of the bill, and should not militate against the desirability of the new department. Mr. Noyes urged the passage of the bill for the purpose of opening up foreign markets, and, in this connection, he said that the new department would be of enormous advantage to manufacturers having a comparatively small business, who could not afford to maintain the organizations kept up by large firms for exploiting their goods abroad. The department would, therefore, be a great aid to business houses of moderate means unable at present to compete for any share of our foreign trade.

The other speakers advocated the new department enthusiastically, and generally favored the Nelson bill for the parliamentary reasons given by Mr. Search. Following the hearing of these business men the committee listened to several representatives of labor organizations who sought to eliminate from the pending bills the proposition to include the bureau of labor in the proposed department.

Thomas F. Tracey, representing the American Federation of Labor, read a letter from President Gompers giving reasons why a Department of Commerce should not include labor. In reply to questions by members of the committee concerning the apparent diversity of opinion between the Federation and the Knights of Labor, he asserted that while several years ago the Knights of Labor constituted a very strong organization, it had now dwindled down to something like 10,000 members, while the Federation of Labor had a membership of 1,250,000. H. R. Fuller, representing several national organizations of railway employees, said that while he did not wish to be understood as opposing the establishment of a Department of Commerce, he wished to make it clear that organized labor had for 35 years been working to secure the establishment of an executive Department of Labor, with a Cabinet officer at its head. He thought labor and commerce should not be combined, as their interests were not identical. "Commerce," he said, "is headed by men who are the prime movers in the present proposition. If this movement is successful, it would be only natural and right that commercial men, and not laboring men, should be represented in the man selected as the head of the new department. It is an impossibility for a man who has the interests of the employing classes at heart to be equally interested in the affairs of labor, and equally, a man who would be a representative of laboring men would be unable to guard the commercial interests in a single hearted manner."

With regard to the hearings and the probable action of the committee, Chairman Hepburn said to the correspondent of *The Iron Age*:



"Judging by the discussion we have heard, the proposition for a new department is a very popular one with business men generally. I imagine that most of the opposition to the exact terms of the pending bills will come from department officials who will be affected by the change. Certain Cabinet officers, for example, will be disposed to retain all their bureaus, and will object to these proposed transfers. There are also several independent bureaus whose chiefs will not relish the idea of being placed under the jurisdiction of a Cabinet officer. The committee will consider all these points carefully, and in deciding they will bear in mind that the general welfare of the people at large rather than the desires of individuals should guide us."

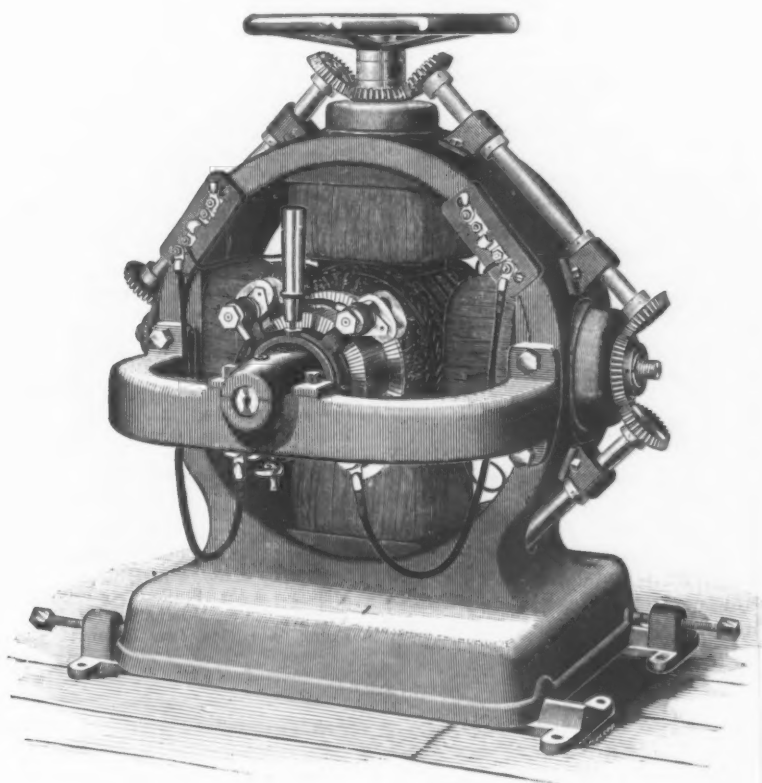
W. L. C.

### The Stow Multispeed Motor.

The new type of four-pole multispeed motor illustrated herewith combines all the advantages of the ordinary multipolar motor with the added advantage of

supporting brackets may be removed and the ends of the frame finished so as to receive suitable inclosing heads, in the center of which the armature bearings are arranged. The 6 horse-power machine, shown in the cut, is designed for a minimum speed of 700 revolutions per minute, the maximum speed being 1500 revolutions per minute, giving a total speed variation of 115 per cent., at any speed between which limits the machine develops its full rated horse-power with an efficiency of only 2 per cent. less at its maximum than at its minimum speed. This justifies us in the statement that the motor may be operated at any imaginable speed within the limits of 115 per cent. variation, the efficiency of the motor at a given load being practically independent of the speed at which it is operated, a claim which cannot be made for any other motor operating on a constant potential.

The construction of the pole piece and plunger of the multipolar motor is similar to that used in the bipolar form, the field strength, consequently the armature



THE STOW MULTISPEED MOTOR.

an operative speed range of 100 to 150 per cent. from minimum speed, the percentage of speed variation increasing with the size of the machine. The armature rotates in a balanced magnetic field under all conditions of speed, this magnetic balance being secured by a simultaneous radial adjustment of the four plungers by means of bevel gearing, a hand wheel, by which the plungers are moved, being located conveniently at the top of the machine. The design of the pole pieces and the selection of gearing is such that no great effort is required at the hand wheel in order to move the plungers against the tractive power of the field magnet. As the gears are small, and the gear rods lie close to the frame of the motor, this mechanism does not detract from the otherwise symmetrical and pleasing design of the machine. In common with other closely designed multipolar machines, the various parts of the machine are arranged very compactly and the design secures a substantially reduced weight at a given speed over the bipolar form. The base of the motor is cast integral with the frame, and is provided with V slots at each of the corners, the rails being adapted to fit within these slots.

While the cut shows an open type machine the design is such that if an inclosed motor is desired the armature

speed, being varied in accordance with the position occupied by the pole piece cores or plungers.

When the plunger is adjusted so that its inner end comes in contact with the pole shoe the magnetic circuit is most complete and of minimum reluctance, and, since the magnetomotive force of the field coil remains constant the volume of magnetic flux becomes a maximum and the speed minimum, or normal. As the plunger is being drawn away from contact with the pole shoe a column of air is interposed which gradually increases the reluctance of the magnetic circuit as long as the plunger continues to be withdrawn. When the plunger reaches the limit of its outward motion the reluctance of the magnetic circuit and hence the speed becomes maximum.

To those familiar with the action of field regulated shunt motors of ordinary type a variation in speed of 115 per cent. by a corresponding variation of the magnetic flux would seem impossible of realization on account of the difficulty of securing sparkless commutation when the field strength of the motor is so abnormally reduced. In the construction of these multispeed motors, however, the design of the pole piece and plunger is such that as the volume of effective magnetism is diminished

by the outward movement of the plunger, the remaining magnetic flux is forced more and more in the direction of the pole tips, thus furnishing a magnetic fringe at all times of sufficient intensity to insure sparkless commutation.

In regard to the fineness of speed adjustment it is evident from the construction of the machine that there is no speed between maximum and minimum which cannot be obtained by an appropriate adjustment of the hand wheel.

It should be understood that while the motor carries its full load sparklessly at any imaginable speed within its range at practically maximum efficiency it will also carry any lesser load with a consumption of power corresponding with the actual work done.

As the speed regulation is effected solely by varying the reluctance of the magnetic circuits no controller or rheostat or resistance of any kind is used in the regulation of speed, all electrical circuits and connections remaining unchanged through the entire range of speed.

The machine illustrated represents a type which is being built in sizes 5 horse-power up to 25 horse-power. For sizes above 25 horse-power automatic means can be furnished for varying the speed. It is a fact worthy of emphasis that the special advantages offered by these motors are obtained without the sacrifice of any advantageous feature possessed by other machines of ordinary type, the efficiency being in every case fully up to the standard of first-class modern practice.

The self regulation of the machine is as close, and in some cases closer, than the regulation of motors of common form, this being due to the ample size of the armature conductors used in these machines. The temperature of the various parts of the machine for open and inclosed types comes well within the heat limits accepted as standard practice. Concerning the action at the commutator these machines carry full load sparklessly at any speed within their range, commutation being accomplished as perfectly at the highest speed as at the lowest.

It is interesting to note that in all other motors the number of operative speeds corresponds to the number of steps in the controlling device, while the motor herein described possesses a speed range of absolute continuity; in other words, between the maximum and minimum limits an infinite number of speeds may be obtained without the use of any controller or rheostat, whose parts, however well made, are liable to become burned or otherwise deranged by use. These motors are built by the Stow Mfg. Company of Binghamton, N. Y.

**Jas. H. Baker Mfg. Company.**—The Jas. H. Baker Mfg. Company, with offices in the Park Building, Pittsburgh, and works at Tarentum, Pa., manufacturers of wagon hardware of all kinds and forgings, are making some large additions to their plant. To their present building an addition is being made 150 x 60 feet in size, while an entire new building, 350 x 80 feet, is being added. These buildings are of steel construction, with brick sides and slate roofs. The contract for the steel construction has been given to the Penn Bridge Company of Beaver Falls, Pa. The new additions will be utilized by the company for the manufacture of a new line of railway forgings and also some other new goods which they will soon place on the market. The business of this concern has grown very materially in the last year or two, and a large increase in capacity for their products has become absolutely imperative.

**The American Brake Shoe & Foundry Company.**—An official announcement has just been sent to the trade naming the constituent companies of the American Brake Shoe & Foundry Company. They are: Ramapo Foundry Company, Mahwah, N. J.; Sargent Company, Chicago, Ill.; Lappin Brake Shoe Company, Bloomfield, N. J.; Corning Brake Shoe Company, Corning, N. Y.; Streeter Brake Shoe Company, Chicago, Ill. Temporary offices are now held at 26 Cortlandt street, New York. Hereafter the agents of the constituent companies will represent the combined interests; until further notice, however, orders should be sent direct to the several companies as heretofore.

## The German Sheet Iron Syndicate.

Toward the end of last month there was formed a syndicate of the manufacturers of sheets in Germany, as a limited liability company, under the title of Verband Deutscher Feinblechwalzwerke.

The following 46 works are members of this syndicate:

Altenhundener Walz-und Hammerwerk, Altenhunden.  
Althaus, Pletsch & Co., Attendorf.  
Baroper Walzwerk, Barop.  
Bismarckhuetten in Bismarckhuetten O. S.  
Bremerhuetten, Gelsoweld.  
I. I. Bruck's Wittwe, Weidenau.  
Capito & Klein, Benrath.  
Christinenhuetten, Meggen.  
Dillinger Huettenwerke, Dillingen a. d. Saar.  
Duisburger Eisen- u. Stahlwerke, Duisburg.  
Duesseldorfer Roehren- u. Eisenwalzwerke, Duesseldorf-Oberbilk.  
Eichener Walzwerk u. Verzinkerei, Creuzthal.  
Eisen- u. Stahlwerk Hoesch, Dortmund.  
Eisenwerksgesellschaft Maximilianshuetten, Abtheilung Koenig Albert Werk, Zwickau.  
Friedrichshuetten, Abtheilung Carl Stein, Wehbach.  
Fuhrmann & Redicker, Hamm i. W.  
Gelsowelder Eisenwerke Act. Ges., Gelsoweld.  
Grafenberger Walzwerk, Duesseldorf-Grafenberg.  
Gewerkschaft Grillo-Funke & Co., Schalke.  
Gussstahlwerk Witten, Witten a. d. Ruhr.  
Guthhoffnungshuetten, Oberhausen, Rheinl.  
Hoerder Bergwerks u. Huetten Verein, Hoerde.  
Huestener Gewerkschaft, Huesten, Westfalen.  
Kaiser & Co., Weidenau.  
Fried. Krupp, Essen a. d. Ruhr.  
Langscheder Walzwerk, Langschede a. d. Ruhr.  
Lauchhammer, vorm. graeflich Elmsiedelsche Werke, Lauchhammer.  
Listernohler Walzwerk, Eberh. Sohler & Co., Attendorf.  
Meggenener Walzwerk, Meggen.  
Menne & Co., Weidenau.  
Wolf Netter & Jacobl in Finnentrop (Westfalen), Hausach (Baden) and Strassburg (Elsass).  
Oberbilkler Blechwalzwerk, Duesseldorf-Oberbilk.  
Ohler Eisenwerk, Theob. Pfeiffer, Ohle.  
Phoenix Act. Ges., Eschweiler.  
Hub. Ruegenberg, Olpe i. Westf.  
Siegener Eisenindustrie Act. Ges. vorm. Hesse & Schulte, Siegen.  
Sleghuetter Eisenwerk, Siegen.  
Sieg-Rheinische Huetten-Act. Ges., Friedrich Wilhelmshuetten (Sieg).  
Silesia, Emailir- u. Metallwaarenfabrik, Berlin.  
Justus Stahlschmidt, Creuzthal.  
Steinselver & Co., Eisfeld.  
Stemmer & Co., Spillenburg bei Steele a. d. Ruhr.  
Thyssen & Co., Muelheim a. d. Ruhr.  
Union, Act. Ges. fuer Bergbau, Eisen- und Stahlindustrie, Dortmund.  
Ver. Kammerich'sche Werke, Schladeren a. d. Sieg.  
Phil. Weber, G. m. b. H., Dortmund und Hostenbach.

These include all the works which manufacture sheets with the exception of the Ver. Koenigs-und Laurahuetten, in Laurahuetten, O. S.; the Oberschlesische Eisenbahnbedarfs Act. Ges., Friedenshuetten, O. S.; De Wendel & Co., Hayingen, Lothringen, and a few smaller works in the Siegen district possessing little importance. These concerns, particularly the Laurahuetten Works, will not alone co-operate with the syndicate so far as prices are concerned, but have obligated themselves also not to increase their present production of sheets. It will be the problem of the new syndicate to market the present enormous production of about 350,000 tons of sheets at home and abroad, the value of this output being about 50,000,000 marks. The syndicate acts as the buyer of the product of the works, receiving the total production of the members and selling the same to dealers and consumers under the supervision of a committee of the mills. In the future, therefore, direct dealings between the works and consumers will stop. The syndicate has been arranged for a period of three years, but it may be dissolved at any time by a simple majority vote whenever the home sales of outside works increase to 10 per cent. The selling agency of the syndicate is to closely watch developments in the world's markets, and is to sell larger or smaller quantities for export according to the position of the home market, so that the mills composing it have a regular satisfactory amount of work. It is expected that the financial position of the numerous sheet mills will be very much improved by this consolidation. Until now they could not obtain advantageous prices for their products owing to the sharp competition between them. The establishment of this pow-



erful syndicate is regarded as one of the most important events in the history of the German iron industry.

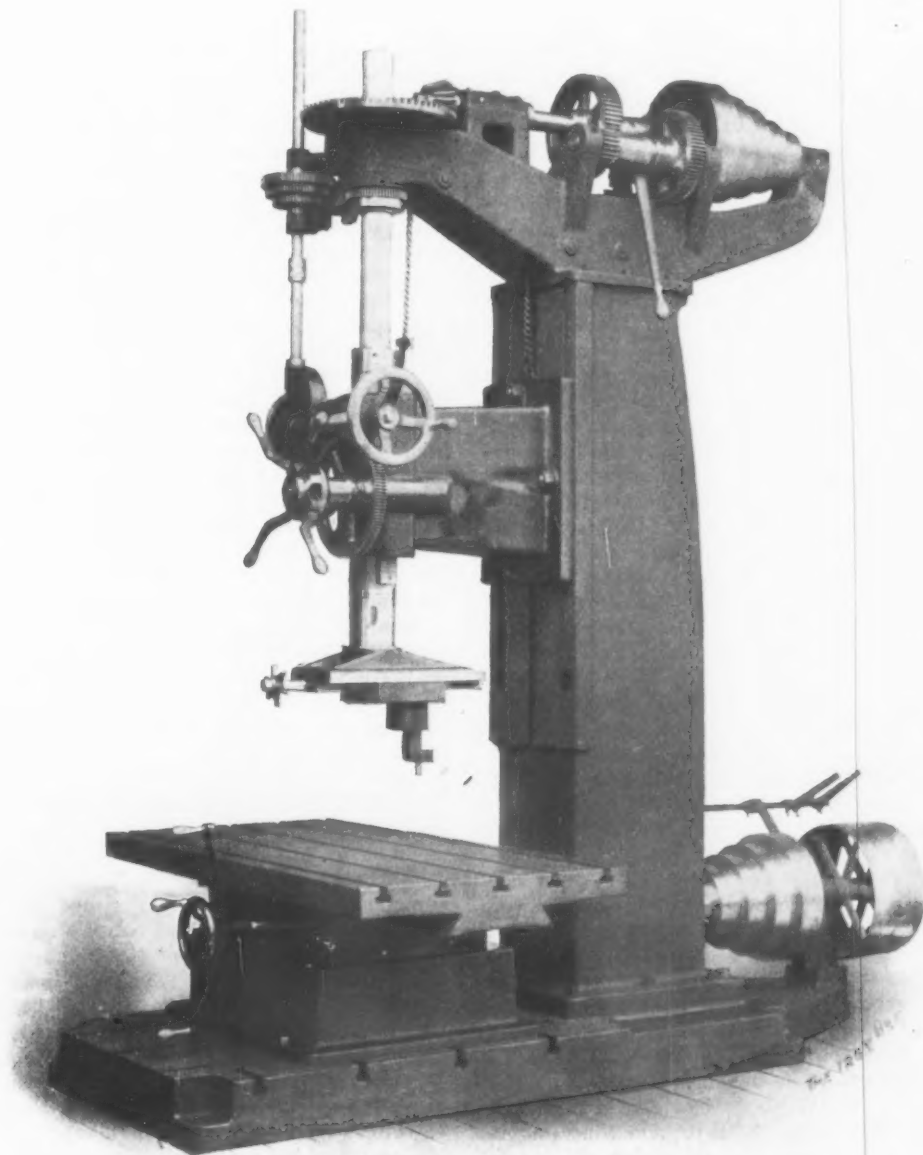
With the successful solution of this difficult problem—difficult on account of the variations in the interests and on account of the large number of the works—it seems possible that the formation of a large bar iron syndicate embracing the whole of Germany may be effected.

#### **The Dreses, Mueller & Co. Heavy Drilling and Boring Machine.**

The machine here illustrated, built by Dreses, Mueller & Co. of Cincinnati, is intended for heavy boring,

gears, and the latter can be made of the friction type with tapping attachment included. The least diameter of the spindle is  $3\frac{1}{4}$  inches, and the total weight of the machine is 8200 pounds.

Boiler inspection is compulsory in England now, and periodical examination "by a competent person" must be made every 14 months, but the wording of the bill is so broad that it is easy to drive the traditional coach and four through it. Competent persons are not described, as to their special abilities to examine boilers, and may be any one with but a partial knowledge of the



THE DRESES, MUELLER & CO. HEAVY DRILLING AND BORING MACHINE.

drilling, tapping, cutting holes in steel plate and bars, and for boring and facing such pieces as cannot conveniently be put on a boring mill, or which require a machine with a large revolving table.

The machine is provided with a compound table with a cross movement of 8 inches and a longitudinal movement of 40 inches. Both dimensions can, however, be changed to suit the nature of the work. The facing head has the well-known star feed, and is furnished with tool clamp and holders to use ordinary square steel without forging. The spindle is balanced, has quick return and power feed, and the latter is so proportioned as to do for both boring and drilling. The feed is varied by shifting the knob on the feed rod while the machine is running. The tool has ten speeds, including the back

business and none whatever of the responsibilities attaching. The law also requires that steam gauges and safety valves must be attached to range boilers, presumably in order that they shall not explode and destroy lives and property, though exactly what person is to attend to the reading of the aforesaid gauges and valves is not stated. All the details above mentioned require as much inspection to keep them up to their work as boilers do, for neglect renders them useless, but the mere fact of their being in place insures immunity from prosecution in case of disaster. Another clause in the act permits any inspector to declare any boiler in action unsafe for use, and the owner of it is liable to \$10 per day penalty if he does not at once shut down and repair it.

### The Census Figures for the Metallurgical Industries.

Although there have been some innovations in the iron and steel industry since the gathering of statistics for the census of 1900, and the returns therefore have lost some of the significance which they might have otherwise, the figures still are possessed of both intrinsic and relative value.

It is notable that the iron and steel industry is given second place in the list of selected industries prepared by the Bureau of Manufactures, textile industries taking first place, with the total value of the products placed at \$966,924,835. If the metal industries are grouped together, however, as are the textile manufactures, the metal products take precedence, the value of the iron and steel, lead, copper and zinc manufactures aggregating \$1,194,545,506. And the metal industries, too, seem to be the more profitable, as the aggregate capital invested, as given by Mr. North, the Chief Statistician, is \$719,395,848, against \$1,066,032,937 invested in the manufacture of textiles.

This is a matter of no great concern, however, and among separate industries iron and steel is far in the lead, giving evidence of the greatest vitality. Not only is the value of the product greater than that of any other industry, but a larger amount of money is distributed to the wage earner and, with the exception of the woolen, cotton and lumber interests, employment is given to a larger number of workers; indeed, in the engagement of skilled labor the iron and steel industry stands pre-eminent. The total number of men employed was 226,161, who received \$122,710,193 in wages, the rolling mills and steel works leading with 183,023 men, who earned \$102,238,692, while the blast furnaces employed 39,241 men, who were paid \$18,484,400.

In 1900 there were 725 establishments—including 57 making tin and terne plates—engaged in the iron and steel industry, an increase of six plants, or a gain of 0.8 per cent., since 1890. It is a matter of interest that there were 438 active rolling mills and steel plants in 1900—a gain of 43 since 1890—while there were only 223 blast furnaces blowing, against 304 active stacks in 1890. The number of forges and bloomeries was reduced from 20 in 1890 to 7 in 1900.

The capital invested in the 725 active establishments in 1900 was \$580,041,710, employment being given to 226,161 workers, earning \$122,710,193, while the salaries paid to the 9544 officers and clerks engaged amounted to \$12,028,811. The cost of the materials used for conversion was \$549,127,082; miscellaneous expenses were \$32,570,556, and the value of the manufactured products, as previously stated, was \$835,759,034. The latter is made up of \$596,585,034, the value of the manufactures from the rolling mills and steel works; \$206,756,557, the value of the output of the furnaces; \$31,892,011, the value of the tin and terne plate, and \$522,432, the value of the products from the forges and bloomeries.

In 1900 there were 117 plants engaged in the smelting and refining of metals, 39 in the smelting and refining of lead, 47 in copper and 31 in zinc. The total capital invested in the smelters and refineries was \$139,354,138, employing 1121 officials and clerks, drawing salaries amounting to \$2,150,018, distributing \$15,937,626 to 24,504 wage earners, expending \$279,655,350 for raw materials and turning out manufactured products valued at \$358,786,472.

### Pittsburgh Machinery for the Steel Works at Monterey, Mexico.

For several weeks past large consignments of steel works machinery have been made to the Cia Fundidora de Fierro y Acero de Monterey, Monterey, Mexico, of which William White, Jr., Pittsburgh, Pa., is the consulting engineer, and the United Engineering & Foundry Company the contractors for the machinery.

Fifteen carloads of the heaviest type of steel works machinery have been forwarded, and at least 15 additional cars will be shipped within the next month, the total aggregate weight of these shipments being about 2,000,000 pounds. The machinery consists of a 44-inch

blooming mill, with tables, approach tables, manipulator, rail straightening presses, cambering machine and roll lathes. The building of this steel plant marks a new era for Mexico, and it is expected that on the completion of this plant it will supply the railroads with rails, structural material and plates for building operations.

### A Concrete Grain Elevator.

It is to the Northwest, where are the great primary grain terminals of the country, that one must look for what is most recent in the construction of grain handling and storing devices. As the Northwest is nothing if not revolutionary in its methods, it follows that new and hitherto untried methods and systems are there originated and brought to successful issue.

Some months since *The Iron Age* described and illustrated the first square bin steel elevator, a radical departure from existing types. Now there is another departure from accepted methods, a grain storehouse unique, not only in material and manner of construction, but in shape and size. It holds under one roof more grain than any structure ever built, and there is no elevator like it in the world. So different is it from any preceding structure that even the tools with which it is built had to be manufactured from the designs of the superintendent especially for this work.

Grain elevators of wood held their pre-eminence in the Northwestern terminals until about 1899, when the increasing competition, the growing importance of the item of insurance and the difficulty of securing sufficient insurance to cover the wheat in a single elevator made some other construction imperative. In 1899 three systems of fire proof storage were under serious consideration, the steel with round or square bins, the tile round bin and the concrete bin. Each of these three systems has since been successfully tested upon a vast scale.

The late Frank H. Peavey of Minneapolis was, up to the day of his death, the largest grain handler in America. The elevator capacity of his various systems foots up about 36,000,000 bushels, of which there are 12,000,000 bushels at the head of Lake Superior and 8,000,000 bushels in Minneapolis. Of his total capacity two-thirds is terminal and the rest in country houses scattered from the Manitoba line to Kansas and Nebraska. Two years ago Mr. Peavey, realizing the necessity of fire proof storage and not satisfied with steel, made some experiments with concrete as a material for grain tanks. In the summer of that year his firm erected, under the supervision of C. F. Haglin, a contractor, a single experimental tank, 114 feet high, 25 feet in diameter and of an average thickness of walls of 8 inches, adjoining one of their Minneapolis elevators. It was filled with wheat, and left till the following spring, when careful inspection was made of the results. These were satisfactory, and members of the Peavey Company went abroad to inspect cement construction. At Braila, in Roumania, a large elevator was found, owned and operated by the Government, and built wholly of cement, with wire mesh imbedded in the walls. Another at Galatz was carefully inspected. The cement used more than 2000 years ago in the colosseums of Naples and Rome was examined and everything possible was done to find the best methods of construction. On their return the construction of the great plant recently completed at Duluth was decided upon.

The storage house embodies the concrete and wire mesh system with steel tie rods as an additional strengthening, and consists of 50 tanks, of which 30 are circular and the others occupy the interspaces between the circles. The strain up in the sides of an elevator bin exerted by the grain that is stored therein or passes down when drawn out through the bottom is peculiar and severe. These circular bins are arranged in five rows of six bins to the row, and between each row, set in the foundation, is a tunnel carrying an endless belt, upon which grain stored in the bins alongside falls for delivery to the working house alongside. There are also steel, concrete floored galleries running from the upper part of the working house to the tops of the bins in the concrete



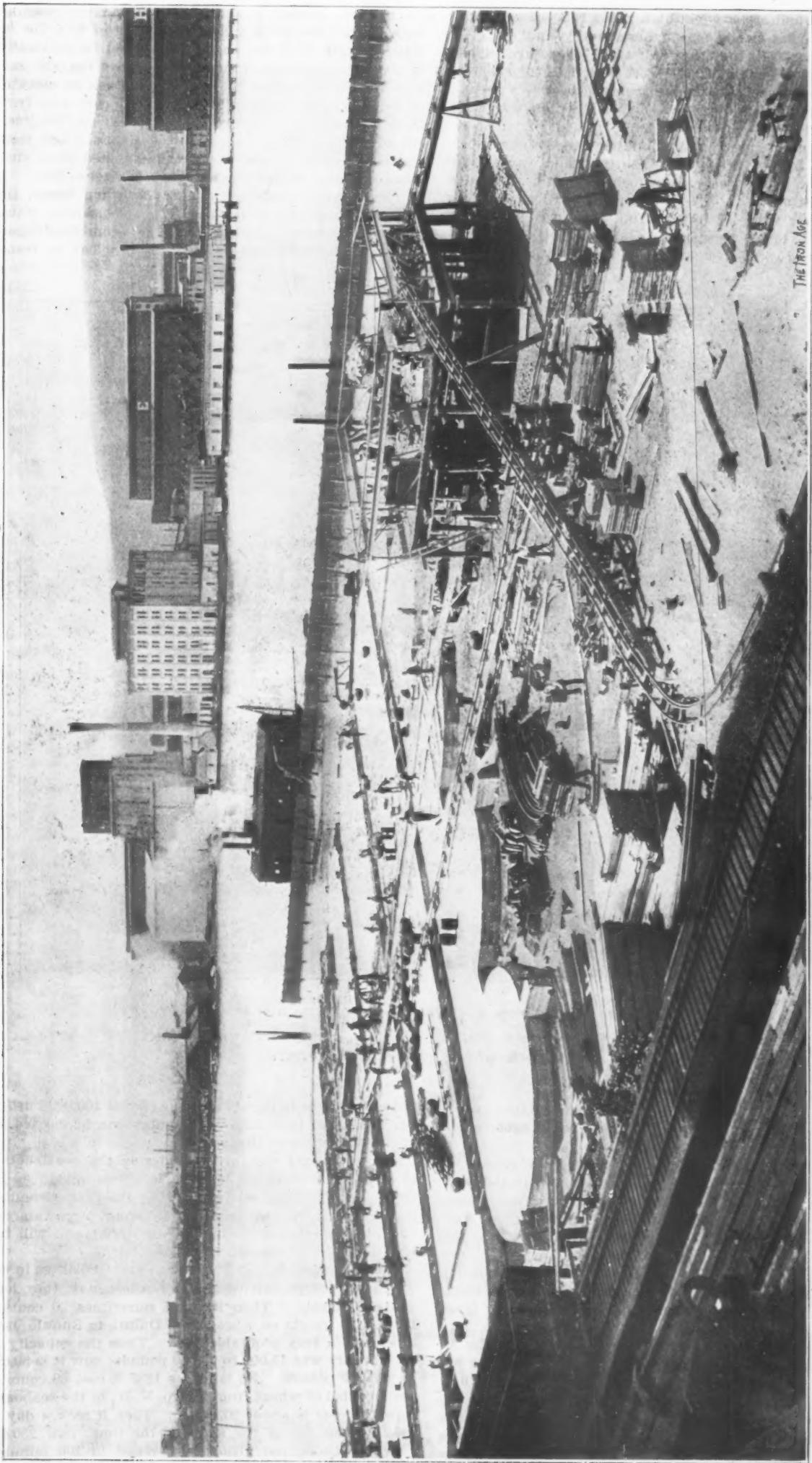


Fig. 1.—Foundation of Concrete Elevator, with Concrete Mixing Plant and Hydraulic Dredge, with Wood Elevators in Background.  
GRAIN STOREHOUSE BUILT OF CONCRETE.

building for filling the latter. In one-half of this building the concrete walls, which vary from 12 to 8 inches in thickness and are 104 feet high, are strengthened by  $1\frac{1}{2}$  x  $\frac{5}{8}$  inch flat bands placed horizontally and spaced 8 inches apart. In the other half these straps are supplemented by a system of steel wire built into the concrete as a large mesh. Either plan seems to be amply secure, while the addition of the wire makes much more work in construction.

The concrete used in this building was ordinary Portland of a leading brand, mixed in the usual way and by machinery. The forms in which the work was done were built up of angle iron and plank, and were 3 feet high. They were set by knocking in wedges carried in the outside of the forms, and were loosened when these wedges were knocked down. Jacks set into the forms

hourly, there is no vibration in the top of this structure.

There is absolutely no wood in this building and no insurance is carried. Insurance for wood elevators filled with from 1,000,000 to 2,000,000 bushels of flax, for instance, worth \$1.75 per bushel, would not be obtainable in America, and for what might be covered the rate would average perhaps  $2\frac{1}{2}$  per cent. Such an elevator as this concrete building, whose initial cost was from 18 to 20 cents per bushel of capacity, will pay for itself out of the premiums saved. Besides, banks are more ready to loan on warehouse receipts issued from such a house than from one where there is danger of fire.

This elevator and its subjacent working house, the building in which is all the machinery of cleaning, transmission, weighing, shipping, &c., have a combined capacity for 6,200,000 bushels of grain. Wheat can be trans-

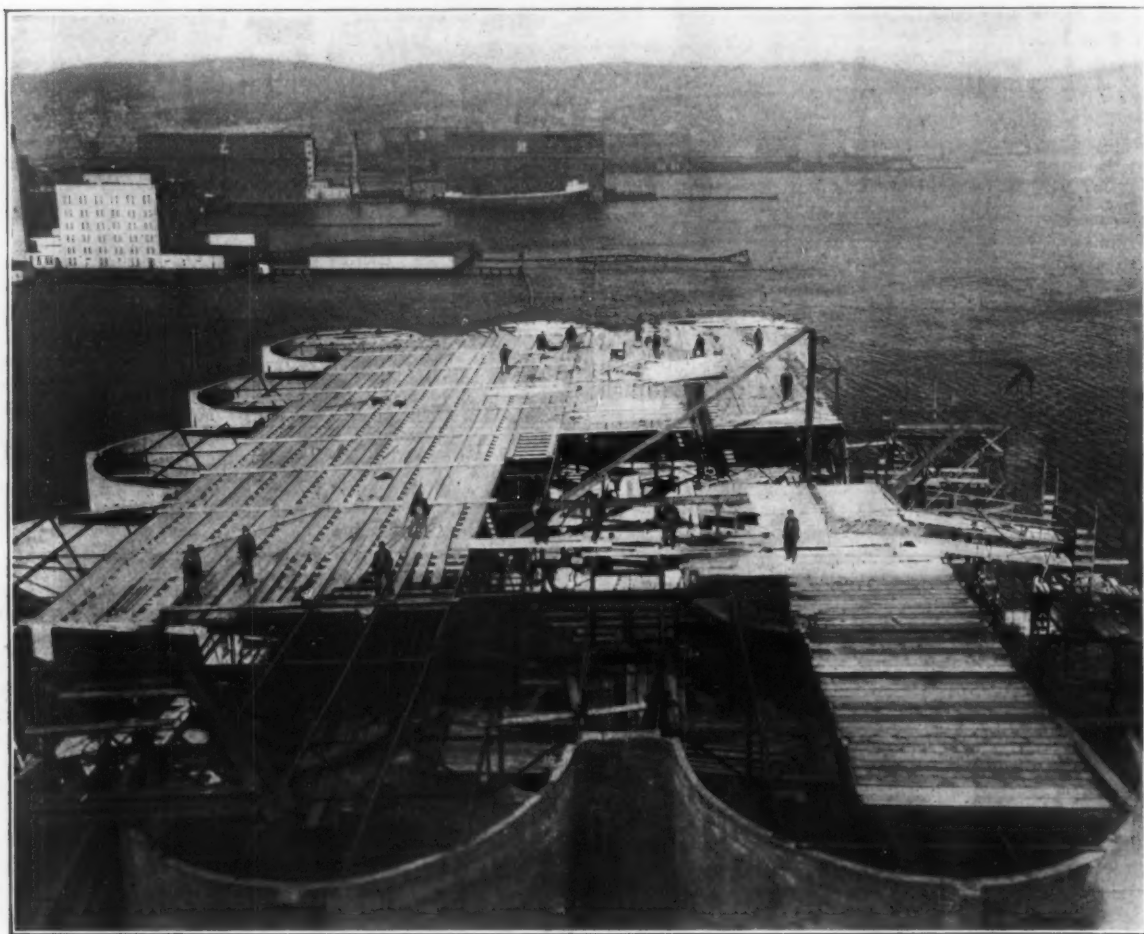


Fig. 2.—Showing Three Rows of Bins Completed to the Roof Truss.

#### GRAIN STOREHOUSE BUILT OF CONCRETE.

and lifting on the completed concrete structure raised the forms, and each set of forms are continuous for an entire row of six bins.

The elevator was erected on a pile foundation, and more than 9000 piles were driven to refusal in the sand and clay bottom of the harbor. Sheet piling was driven around the outside and the entire space was filled with sand. An asphaltum course in the foundation effectually prevents the rise of moisture from the bottom. The walls of concrete are found, in actual practice, to dry the grain inside them, and no outside heat is able to injure the grain stored, which comes out remarkably fresh and sweet.

The roof of this elevator is of concrete built flat in between I-beams woven with wire. The pathways on top of the bins, and the tracks for the great belts and their trippers and discharges, are of the same construction, the concrete in these cases being 4 inches thick and the beams being spaced about 4 feet apart. With the belts running full, each one carrying 20,000 bushels of grain

ferred from one to the other at the rate of 100,000 bushels per hour, and both inflow and outgo can be carried on at the same time at this speed.

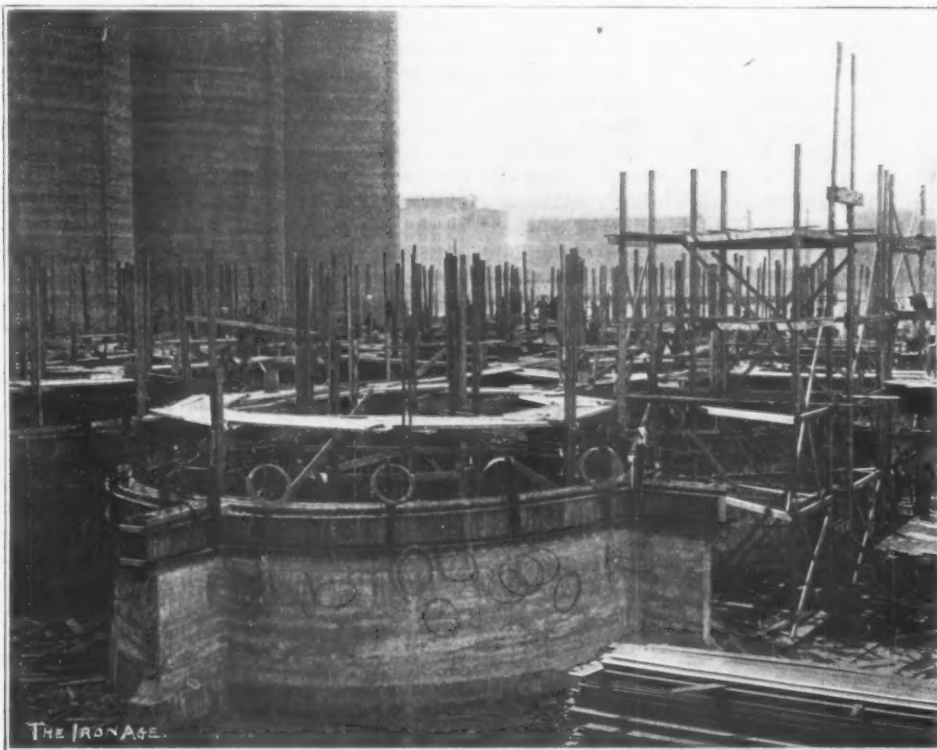
Many persons who are considering the construction of large grain elevators in other localities have been inspecting this plant. It is probable that the Canadian Pacific Road, which proposes to erect large storage on Lake Superior, will adopt this material, and will follow this style of construction.

In 1870, when Mr. Peavey began grain business in the Northwest, ships carried 30,000 bushels, now they load 250,000 bushels. Then he paid sometimes 20 cents a bushel for freight on wheat from Duluth to Buffalo; now 2 cents is a very profitable rate. Then the capacity of freight cars was 15,000 to 20,000 pounds; now it is 80,000 to 100,000 pounds. So lately as 1885 it cost 39 cents to get a bushel of wheat from Fargo, N. D., to the seaboard, now the cost is about 20 cents. Then it took a day or two to load one of the ships of the time; now 250,000 bushels can be put aboard the vessel in 100 minutes.

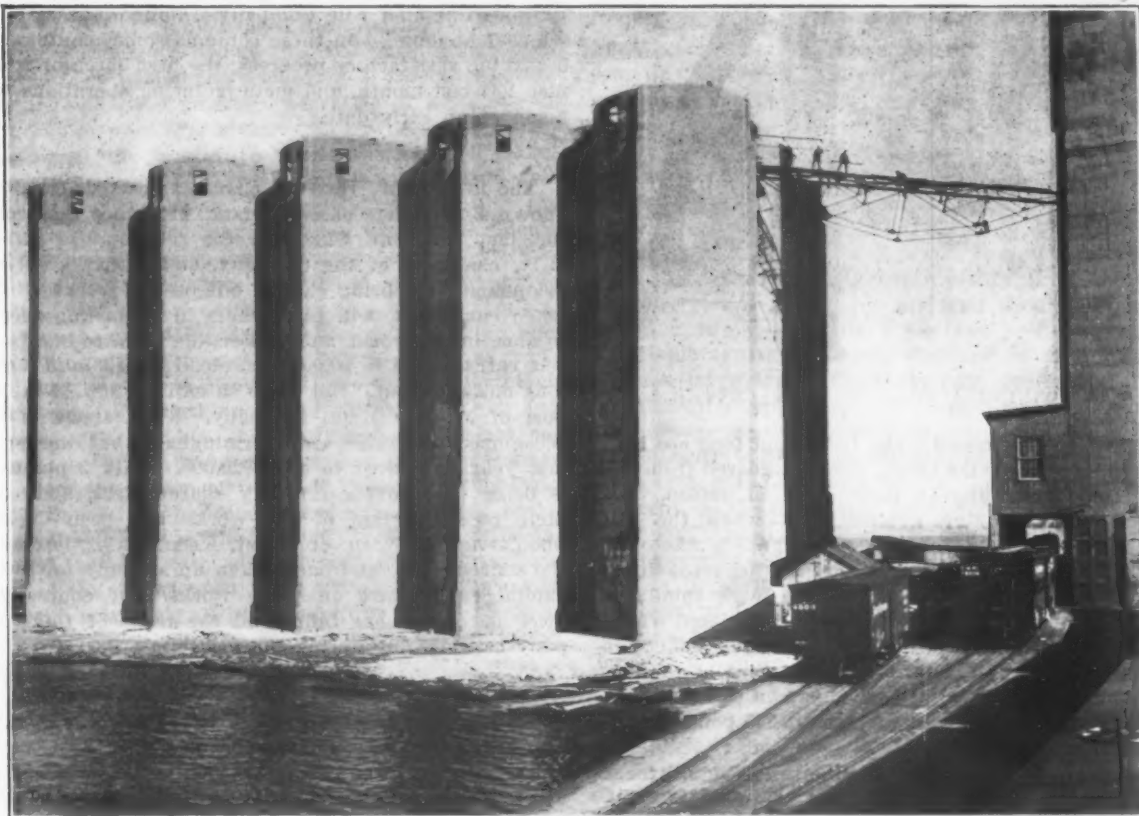


When Mr. Peavey began business the total elevator capacity of Duluth was 350,000 bushels; now it is 34,000,000 bushels.

largest wheat handling business in the world, and he did it largely by his broad grasp of the situation and of the conditions surrounding it. At the time of his death, a



*Fig. 3.—Construction of Second Three Rows, Showing Forms in which Concrete Was Set, and Wire Intermesh.*



*Fig. 4.—House Completed to the Roof.*

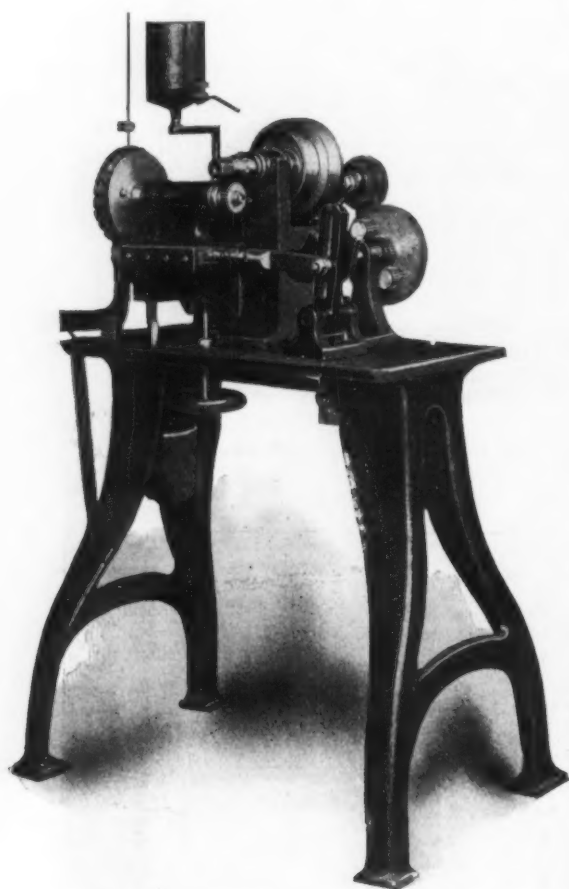
#### GRAIN STOREHOUSE BUILT OF CONCRETE.

Frank H. Peavey, the builder of this Duluth system, was a wonderful grain merchant. The United States had never seen his equal. He built up in a few years the

few months ago, his standing was such that his single name commercial paper in amounts almost fabulous was gladly taken by banks throughout the country.

### The Twining Automatic Gear Cutter.

The accompanying engraving represents the smallest of three automatic gear cutters built by the Twining Mfg. & Tool Company of Cleveland, Ohio. It cuts spur gears 6 inches in diameter,  $1\frac{1}{2}$ -inch face and 14 inches in diametrical pitch. The cutter spindle has three changes of speed, is driven by a 2-inch belt, and the cutter arbor is  $\frac{7}{8}$  inch in diameter. The feed is operated by a cam, the cam shaft being driven by change gears, thus eliminating the danger of spoiling the work by slipping of the belt or friction feed. The result is heavier and faster cuts. The machine cuts almost continually, as the return is made in a small fraction of a second. Sixty teeth a minute may be cut when working on fine teeth; in other words, the machine feeds forward over the work, returns, indexes and is ready for the



THE TWINING AUTOMATIC GEAR CUTTER.

next tooth in one second. The index and feed are both operated from the same shaft, which is geared from the cutter spindle, making all parts work in unison. The machine stops running automatically when the last tooth has been cut, which acts as a signal to the operator. The length of stroke is quickly adjusted by a lock nut. The head which carries the work spindle is adjusted by means of a screw operated by a hand wheel, a dial graduated to thousandths of an inch indicating the adjustment. The transverse adjustment of the cutter is obtained by an adjustable collar on the cutter arbor. The net weight of the machine is 375 pounds.

**The Civic Federation's Conciliation Committee.**—Senator Hanna, chairman of the Conciliation Committee of the National Civic Federation, has appointed the following as members of the committee: Marcus A. Hanna, Samuel Gompers, Oscar S. Straus, Charles A. Moore, R. M. Easley, Archbishop Ireland, Bishop Potter, Franklin MacVeagh, John Mitchell, Frank P. Sargent, James Duncan, J. Kruttschnitt, Marcus M. Marks, William H. Pfahler. By a resolution passed at a former meeting of the Federation, this committee is vested with power to proceed to settle labor disputes and bring about various proposed industrial reforms.

### Notes from Great Britain.

#### Charles Cammell & Co.

LONDON, March 22, 1902.—The thirty-eighth annual report and balance sheet of Charles Cammell & Co. has just been issued. From it I observe that the profits for the year ending December 31 amount to \$1,000,000, to which has to be added unappropriated balance from the previous year of over \$200,000. The profits are divided into 5 per cent. dividend on the preference shares,  $12\frac{1}{2}$  per cent. plus a bonus of  $2\frac{1}{2}$  per cent. on the ordinary shares. The diminution of profits compared with those of the previous year is attributed mainly to the circumstance that orders for armor from the British Government have been withheld, causing a stoppage of manufacture during the last three months of the year. In addition, there has been a lessened demand and a lowering of prices for railway and other materials. The report further states that competition in rails and railway material generally is becoming increasingly keen. Last April, Sir Alexander Wilson, Bt., resigned the position of managing director on account of health, and in his place A. G. Longden and F. C. Fairholme were appointed joint managing directors. Sir Alexander Wilson retains his position as a salaried chairman. I reported some time ago that this company had secured large mining properties in Spain. The directors say that the prevailing low prices and the necessity for further development of the mines and for augmenting the transit facilities to Bilbao retard the period at which the importation of ore from them may be profitably proceeded with. An independent company have been incorporated, to whose capital the shareholders of Charles Cammell & Co. are not asked to contribute, for the purpose of constructing and working a direct line of railway between a point on the Sierra Company's existing line and Bilbao. The erection of buildings on the site at Odessa for the workshops of the Russian Cammell Fife Company, Limited, the start of which I announced in these columns some months ago, is making satisfactory progress; the first batch of workmen left last month, and manufacturing operations will begin at an early date.

#### Other Ventures.

The firm of W. Doxford & Sons, Limited, the well-known shipbuilders of Sunderland, announce the profits for last year at \$400,000. Sir Theodore Doxford, M.P., chairman of the company, states that great developments are being carried out on the works which, when completed, will place them in a position second to none in the world, and will enable them to build vessels carrying up to 20,000 tons dead weight and 30,000 tons measurement. Not quite so satisfactory is the report of Muntz's Metal Company. This is one of the recognized institutions of Birmingham, but the profit last year amounted to only \$20,000. Only 2 per cent. is being paid to the ordinary shareholders, and complete reconstruction of the works has been decided upon. Arthur Keen of Guest, Keen & Co. is one of the shareholders, and has spoken up strongly for heavy capital expenditure on these works. Of course, the price of copper has influenced the trade of this company considerably during the past year.

#### Japanese Minerals.

Some time ago *The Iron Age* announced the opening on the Island of Kyushu, Japan, of a new steel works, at an estimated cost of \$10,000,000. The plant is laid down on a scale to produce 35,000 tons of rails, 10,000 tons of Bessemer bars, 25,000 tons of plates, 20,000 tons of plain and fashioned bars from Siemens-Martin material, or a grand total of 90,000 tons of finished steel work per year. The Japanese Government has set these works going with an order for 20,000 tons of rails. With a knowledge of these works being in existence, a report on the mineral wealth of Japan should prove interesting. It is a translation of a communication made by an official of the Japanese Department of Agriculture and Commerce to the *Jiji*, a journal published at



Tokio in the vernacular. The following are the chief points of interest:

There are no large veins of iron in Japan, so far as investigations conducted by the authorities go. At present the iron deposit at Kamaishi is generally regarded as the largest of its kind, and is followed by Ugo, Echigo, Hida, Mino, most of the provinces in the San-in-do, &c., where the ore is found to some extent. The output in 1900 was 23,682 tons, representing over 955,286 yen (about \$480,000) in value.

As to coal, Japan produces two kinds—namely, ordinary coal and smokeless coal. The latter is now largely mined in Amakusa, in the province of Kyushu, Kishu, and Nagato, but Mr. Wada regretted to say that in point of quality the Japanese smokeless coal is inferior to Cardiff and other foreign coal, and in consequence the naval authorities are obliged to obtain their supply from abroad. The districts where ordinary coal is chiefly procured are Kyushu, Hokkaido and Iwaki regions, the coal produced at Takashima colliery being superior to any other. The total output in 1900 of Hokkaido was 7,429,457 tons, and the value amounted to 24,583,038 yen (about \$12,290,000).

In regard to petroleum, Echigo stands at the head of the list in producing the largest quantity, and is followed by Hokkaido, Ugo and Totomi, in the order mentioned. The output in 1900 was 767,092 koku (30,453,552 gallons), representing 1,941,518 yen (about \$970,000) in value. Sulphur produced that year in Hokkaido, Rikuzen, Asumi, Shinano, and other provinces amounted to 14,435 tons, valued at 312,835 yen (about \$155,000). In short, the value of the mineral output in Japan in 1900 was 49,936,378 yen (\$24,970,000), which shows an increase of four and a half times as compared with a decade ago.

#### Some Armor Plate Trials.

A press correspondent who has recently been visiting Portsmouth to inspect the results of some armor plate trials, made last week, writes as follows:

"Since the firing took place the 'Belleisle' has been lying at Portsmouth, where the coal backing has been removed from behind the armor plates, and other things done to facilitate a minute observation of the effect of the gun fire upon the armor. Every possible precaution to keep the results of this secret has been taken. The target is shrouded with canvas, and before this was lifted for the Admiralty inspection on Saturday the police cleared every one from those parts of the dockyard whence a sight of the ship could be obtained. The inspection revealed that, instead of only the 4-inch armor having been penetrated, as was at first thought, the 9.2-inch gun, firing armor-piercing projectiles, succeeded in getting through the 6-inch armor as well. One 6-inch plate was perforated, and two of the 4-inch plates were perforated, one being backed with coal and one not. The lyddite shell, although it did not get through the armor, had a curious effect upon the thinner plates, cracking them at the back, though making little indentation on the surface. The common shell broke up harmlessly against the face of the plates. It is understood that the Admiralty are well satisfied with the result of the experiments. The attack upon the armor was very powerful, all being carefully aimed shots at 300 yards range, but the cordite charges were varied so as to alter the muzzle energy of the guns to what it would be had the firing been at different ranges. Still, in actual warfare such accurate firing as this was would be impossible, unless a ship were absolutely at the mercy of the enemy, for the armor received the direct force of every foot-second of the gun power brought against it."

#### The Midland Unmarked Bar Association.

I have more than once commented upon the fact that it is fairly easy for a trade association to maintain its influence and direct affairs when prices are moving upward, but the real test comes on a downward market. This is the experience of the Midland Unmarked Bar Iron Association. Recently some dissatisfaction with the effectiveness of this association has been felt. It attained its greatest success during the boom, and its

standard prices were adhered to during that period. When the collapse came an effort was made to steady the decline in prices and control it within limits which were regarded as reasonable if any profitable margin was to be retained. Since then, however, the market has been cut to pieces, even by members of the association. Some attempt is now being made to give the association more powers than hitherto it has possessed, particularly on the question of pooling. The Strip Makers' Association pool, and they have steadied the downward movement much more successfully than any other association in this country. A meeting of the association has been held this week, which was largely attended. A feeling was expressed that it may be necessary to include the whole of the common bar trade of the country within some new association, if home competition is to be abolished, except that based on superiority of manufacture.

#### Orders for Railway Material.

One of the chief Midland firms of railway carriage and wagon builders has just secured a new order for 100 bogey wagons required for the Cape Government railways. The contract has been obtained in the face of keen competition both from America, Germany and Austria, the quotations of some of the Hungarian houses being exceedingly low.

#### Settlement of the Barrow Hematite Trouble.

I have once or twice referred to the dispute between the Barrow Hematite Steel Company and their preference shareholders. An arrangement has now been reached which, though complicated, works out as a fair compromise. It is as follows:

1. That the nominal value of the ordinary shares and of the 6 per cent. preference shares be reduced to £4 10s. per share, and the 8 per cent. preference shares in proportion, or about £45 per share; the 8 per cent. preference shares to receive the same total cumulative yearly dividend as that to which they were already entitled—namely, £2262.

2. That the preference dividends in arrear on the unreduced capital to December 31, 1901, be paid as soon as possible after the scheme of reduction had been sanctioned either by Parliament or by the court, and, if such sanction was not obtained before Parliament or the court rose for the autumn recess, interest at the rate of 5 per cent. per annum on the preference arrears to December 31 last to be allowed from July 7, 1900, to December 7, 1903, or the date of actual payment, whichever ever happened first.

3. From January 7, 1902, the profits in the hands of the directors available for dividend should be as follows: a, In paying to the 8 per cent. preference shares their cumulative preference dividend of £2262 per annum; b, in paying to the 6 per cent. preference shares a cumulative preferential dividend of 6 2-3 per cent. per annum on the reduced amount; c, in distributing any balance of profit that the directors propose to divide among the shareholders in the proportion of  $\frac{1}{2}$  per cent. on the 6 per cent. preference shares of £4 10s. each for their 1 per cent. on the ordinary shares of £4 10s. each; d, that the 8 per cent. preference shareholders be entitled to 10 votes for each share, and 6 per cent. preference shareholders to one vote for each share; e, the costs and expenses of the preference shareholders' committee to be borne by the company.

#### Liquid Fuel for Ships.

At a meeting this week of the Institution of Naval Architects a paper on liquid fuel for ships was read by Sir Fortescue Flannery, who stated that the use of liquid fuel began on the Caspian Sea in the year 1870. The following is a synopsis of the lecture:

While the advantages of liquid fuel, and the possibility of its successful mechanical use, have been generally admitted, little or no progress in its application had been made outside the Russian inland sea, and the reason of this stagnation had been mainly of a commercial character. The supply of fuel outside Russia had been but nominal, and no general application was possible, unless both war and mercantile vessels could be assured of continuous supply from year to year, and

unless that supply were as regularly accessible at as frequent and convenient oiling stations throughout the world as already exist in the case of coal fuel, and at a cost proportionately as low. Such a condition of things never became possible until the recent discovery of large supplies of oil suitable for fuel, first in Borneo and Burmah, and quite recently in Texas and California. It was to be regretted that the only one of these sources of supply that lies in British territory was that of Burmah. The whole aspect of the question, whether regarded by the Admiralty, the ship owner or the naval architect, had been changed by the assurance of continuous supplies of liquid fuel, and it became necessary to treat the question not only as of practical importance, but of urgency to those responsible for the highest efficiency of fighting and carrying ships. The Admiralty had determined exhaustively to test the use of this newly resuscitated means of evaporation, and the reference to the question by the First Lord in his recent memorandum was a clear indication of progressive policy—a policy which was understood to extend to trials not only in destroyers, but also in three cruisers and one battle ship. The Italian Admiralty had been pursuing the question for some years, even before large supplies were assured. The German Admiralty had used liquid fuel on the China station for many months in lieu of coal for auxiliary purposes on board ship. The Hamburg-American Steamship Company had fitted four steamers for liquid fuel, and the North German Lloyd two vessels. The Dutch Navy had fitted liquid fuel in conjunction with coal to two destroyers, and Dutch mail and cargo steamers in the Far East had the new liquid fuel in regular use. Danish ship owners had ordered the building in Germany of two steamers to burn liquid fuel; while at least a dozen were building with suitable fuel apparatus included in their design. The widespread attention and steady application of scientific research now being brought to bear upon so important a subject must lead to great developments in the near future.

#### The Spread of the Combine.

Although there is as yet no authority for it, still it is now stated as highly probable that the Blaenavon Coal & Iron Company are about to be amalgamated with Guest, Keen & Co. The Blaenavon Company are one of the biggest concerns in South Wales.

S. G. H.

#### The Wellman-Seaver-Morgan Engineering Company.

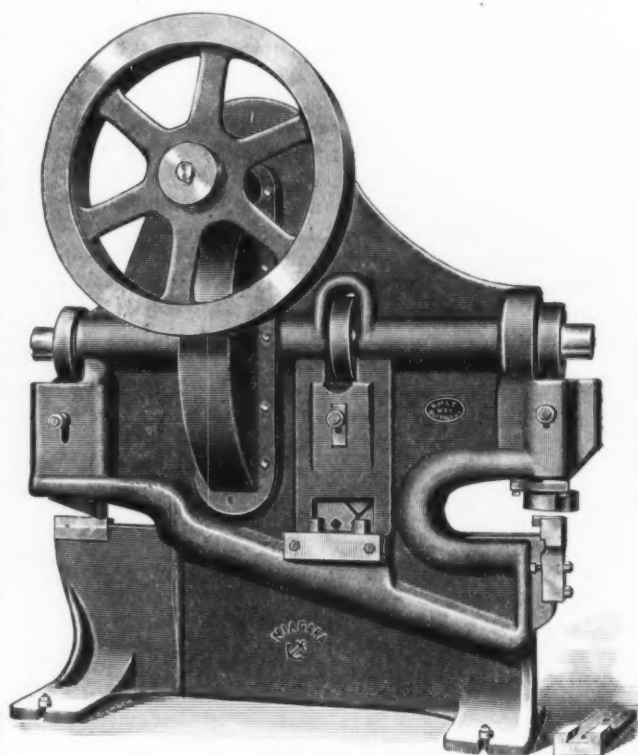
—At the annual meeting of the Wellman-Seaver Engineering Company of Cleveland action was taken to change the name of the corporation to that of the Wellman-Seaver-Morgan Engineering Company, this action being due to a desire that proper recognition be given to the ability and services of Thomas R. Morgan, who for several years has been secretary of the company. Mr. Morgan, who before his connection with the Wellman-Seaver Company was general manager of the Morgan Engineering Company, at Alliance, has had a very wide experience in engineering lines, and his connection with the Wellman-Seaver Engineering Company has contributed in no small degree to the phenomenal growth and prosperity of that company. The title of Mr. Morgan has also been changed to secretary and works manager, in which capacity he will have direct charge of the large manufacturing plant of the company now nearing completion and giving promise of the works being conducted in every way along the most improved and modern lines. The other officers of the company remain as before—namely, S. T. Wellman, president; J. W. Seaver, vice-president; C. H. Wellman, general manager; T. R. Morgan, secretary and works manager; A. D. Hatfield, treasurer; C. W. Comstock, purchasing agent and assistant secretary.

John Birkinbine, the well-known consulting engineer of Philadelphia, will deliver an illustrated lecture before the Engineers' Club of Philadelphia on "Changes in the Manufacture of Pig Iron" on April 5. At a sub-

sequent meeting James Christie of the Pencoyd Works will read a paper on "Modern Developments in the Production of Open Hearth Steel."

#### The Niagara Combination Punch and Shear.

The shear part of the combined punch and shear built by the Niagara Machine & Tool Works of Buffalo, N. Y., is intended for cutting plates or flat bars up to  $\frac{1}{2}$  inch thick. The punch portion, having a 12-inch throat, is suitable for plates and bars, also for punching the flanges and webs of I-beams, angles and channels. The capacity is a  $\frac{3}{4}$ -inch hole through  $\frac{1}{2}$ -inch iron. The center part is intended for cutting off flat and round bars, angles and T bars, and it performs this work without deforming the profile. The machine is driven from tight and loose pulleys, worm and worm wheel, and has a very heavy fly wheel. The belt shifter is adjustable for drive at any angle. The worm wheel is entirely enclosed, and runs in an oil bath. The end thrust of the



THE NIAGARA COMBINATION PUNCH AND SHEAR.

worm is taken up by ball bearings to insure smooth running. A forged steel shaft runs the entire length of the machine, in bronze bearings at the ends, and carries three eccentrics, one for each of the working parts. The motion is conveyed to any of the slides by shifting a wedge between the proper eccentric and slide. The motion continues while the wedge is in place, and the slide will stop at the highest point after the wedge is withdrawn. To make the shear suitable for splitting sheets of any length and width the frame is made with an offset that allows the free passage of the two parts of the sheet, as far as it can be cut apart, one part going downward and the other continuing horizontally. The knives are made of solid tool steel, and adjustment is provided to take up wear. The punch is furnished with two die holders, one of them being suitable for punching holes in the web of I-beams and channels, and the other for punching holes in flanges. Either one of the die holders will answer for plates and flat bars. A stripping attachment is fastened to the frame of the machine. The center part carries a set of knives for cutting off square and round bars, as well as for angles and T-bars, up to 3 inches. No exchange of knives is required for these various shapes.



## The Electro-Chemical Industries at Niagara Falls.

Prof. Joseph W. Richards of the Department of Metallurgy, Lehigh University, delivered an illustrated lecture before the New York Electrical Society on the electro-chemical industries of Niagara.

In opening his lecture Professor Richards pronounced Niagara Falls to be the greatest electro-chemical center in the world. Fully 35,000 horse-power are there being used in these industries, in about twenty different processes, and yet the whole is the growth of the last ten years. The first of these plants to be there established was the aluminum works of the Pittsburgh Reduction Company, in 1892. It is a very significant fact that not only did aluminum thus lead in the industrial development of these electro-chemical industries, but that it has been, in a still more real sense, the mother of most of the rest. Acheson was trying to make aluminum in the electric furnace when he discovered carborundum, from which has developed also the graphite industry; Castner made aluminum for two years until his process was superseded by the electrical processes, and then he turned to develop his method of making sodium, from whence also came the caustic soda business; Wilson was trying to make metallic calcium in order to apply it to reducing aluminum when he discovered calcium carbide, whence also followed logically the manufacture of other metallic carbides, and a little further on, cyanides. Thus at least eight of the different processes in operation at Niagara have been directly or indirectly linked with the development of the electrolytic metal par excellence—aluminum.

A striking feature of electrolytic and electric furnace processes is that they are usually demonstrable on a small scale, and that the industrial application consists simply in multiplying indefinitely these small units. The present caustic soda plant contains 1620 cells, each absorbing  $3\frac{1}{2}$  horse-power, and yet the demonstration of the process on one cell, with  $3\frac{1}{2}$  horse-power, was a sufficient demonstration of the practicability of a multiplied plant of any size. Thus it is relatively cheap to experiment electrolytically, and to even prove beyond doubt the commercial practicability of an electro-chemical process, for the actual plant will be merely the extended duplication of the laboratory apparatus.

### The Manufacture of Aluminum.

The Pittsburgh Reduction Company started making aluminum near Pittsburgh in 1889, using steam power, with coal costing only 75 cents per ton. It is a very significant proof of the cheapness of Niagara water power, at \$20 per horse-power year, that this company have transferred their entire manufacture of aluminum to Niagara. If steam power cannot compete with Niagara power where coal costs only 75 cents per ton, it is pretty safe to say that steam power is entirely out of the contest, at least for power required continuously. Being the first industry to locate at Niagara, the power company made it unusual inducements, and the result has been the development of the largest aluminum plant in the world. This company's output is equal to one-half of the total world's production.

The process used in making aluminum is the well-known Hall process, consisting in electrolyzing a fused bath of the fluorides of aluminum and sodium, in which aluminum oxide has been dissolved. Of the three compounds present, sodium fluoride is the strongest, aluminum fluoride the next, and aluminum oxide (alumina) the weakest. It follows that by sending through the bath a current of properly regulated intensity, and keeping the bath well supplied with alumina, only the latter is decomposed. The details of the construction of apparatus and conduct of the process are so well known or so easily accessible in standard publications that it is superfluous to repeat them here. Let it suffice to say that, using a current of 10,000 amperes through each of a large number of pots in series, the output is about 80 per cent. of the theoretical quantity separable

by Faraday's laws, the other 20 per cent. being redissolved; using 10,000 horse-power altogether, the output is between  $1\frac{1}{2}$  and  $1\frac{3}{4}$  pounds per horse-power day, or, say, 8 tons per day. The three largest single uses of the metal are in use in quieting steel, for cooking utensils and for electrical conductors. To replace a copper wire by one of aluminum of the same conductivity the diameter is increased one-fourth, which increases the cross sectional area one-half; the aluminum wire will then weigh one-half as much as the copper wire which it replaces, be one-half as strong again, and cost 10 to 20 per cent. less. These facts mean dollars and cents to electrical constructors and are the cause of the rapid growth of this application of aluminum.

The production of aluminum is a purely electrolytic operation, one in which the output is proportional to the number of amperes of current used. The fact that the heat generated in the electrolyte is sufficient to keep the bath fused without the use of external heating does not put it into the class of electro-thermal or electric furnace processes, since it is impossible to pass any current whatever through an electrolyte without generating some internal heat in it, and therefore the question as to whether the heat thus generated internally shall be sufficient alone to keep the bath melted, at the proper temperature, is merely a question of increasing the size of the pot and the scale of the operation. Electric furnace operations, on the other hand, are those depending on the generation of a temperature by electrical means sufficient to cause certain chemical reactions to occur among and between the mixtures heated. The output of this class of processes is proportional to the watt energy absorbed by the furnace; the operation proceeds as well with the alternating current as with direct, while electrolytic operations require direct current.

### The Hall Process for Purifying Alumina.

The lecturer then described the recently invented Hall process—a purely electric furnace method of purifying the raw material used in the manufacture of aluminum. To get pure metal it is necessary to put only pure oxide into the pots. The natural mineral, bauxite, contains alumina and several per cent. of silica, oxides of iron and titanium. These are at present removed by a complicated chemical operation costing in the neighborhood of \$40 per ton, so that pure white alumina costs three cents per pound, or six cents for enough to furnish one pound of aluminum. In the Hall process this same natural mineral is mixed with enough carbon to reduce the silica, oxide of iron and oxide of titanium to the metallic state, and the mixture is melted in an arc furnace, using several thousand amperes at 50 to 100 volts. The reduced iron, silicon and titanium, with a little aluminum, collect as a metallic alloy beneath the purified ore, which can be produced of quite as high a degree of purity as the white, chemical alumina—if not purer—and at a smaller cost. The product is mostly lilac colored, crumbles like granular sandstone on exposure, and contains a few per cent. of a lower oxide of aluminum than alumina ( $Al_2O_3$ ) probably  $AlO$ .

### The Acheson/Carborundum.

E. G. Acheson is the genius who has brought two other successful Niagara industries into existence. While trying to produce aluminum, down near Pittsburgh, using an electric furnace, he made accidentally the beautifully crystallized silicon carbide which is known everywhere as carborundum. Mr. Acheson so named it because he thought at first that it was crystallized corundum. As at present manufactured, a 1000 horse-power current, starting at 250 volts and 2000 amperes and running up to 100 volts by 8000 amperes, is run through 20 feet of a mixture of sand and carbon for 36 to 48 hours. The mixture is not sufficiently conducting to carry the current, so the real heating is performed by a carbon conductor surrounded by the mixture to be reduced, and having 20 or 30 times the electric conductivity of the mixture. Nearly all the current is thus carried by the carbon core, and only 3

to 5 per cent. wanders off through the mixture to be reduced. The radiated heat thus heats the mixture to the point necessary for its constituents to react; its carbon acts upon the silica and forms the carbide of silicon, a distinct chemical compound. A layer of 9 to 15 inches of crystals forms around the conducting core, the latter being more or less graphitized. Outside this is a layer of reduced but uncrystallized carborundum 4 to 9 inches thick, and outside of this unreduced mixture. The crystals are broken up, screened, sized, washed with acid and pressed into the forms in which abrasives are everywhere used. Professor Richards stated that this is the first artificial abrasive to enter into commercial use. It is almost as hard as the diamond. The reduced but uncrystallized mixture can be reground and put back into the furnace, or used in blocks as a refractory material. For this purpose it is admirably suited as linings for electric furnaces, being capable of use where ordinary fire bricks would melt like water.

#### **The Acheson Graphite Process.**

The lecturer went on to show how, when a carborundum furnace was overheated, it was found that the crystals next to the heating core were converted *in toto* into graphite. The process was evidently the formation of the carbide first, followed by the volatilization of the silicon as the temperature rose. This suggested to Mr. Acheson the principle of making graphite by mixing amorphous carbon with a metallic oxide, heating so as to form the metallic carbide and then continuing the heating until all the metal is volatilized. A small amount of metallic oxide will suffice for the conversion of a large amount of carbon, for the metallic vapor forms carbide in the outer layers of the furnace, which is afterward destroyed as it gets hotter. Anthracite coal, in which nature has most intimately and uniformly mixed a few per cent. of iron oxide and silica, is converted very completely by the same reactions. The furnace used is a trough 2 feet square by 30 feet long, lined with blocks of carborundum; through the center is placed a small train of conducting carbon to start the current through. When 1000 horse-power has passed through 24 hours, rising from 1000 to 5000 amperes, the charge is found very largely converted into graphite. The same form of furnace can be used for graphitizing ready-made articles of carbon with some metallic oxide, producing thus particularly graphitized carbons for electrolysis of saline solutions; their conductivity is three times that of ordinary carbons, and they are only very slightly corroded. Since the best quality of native graphite costs \$100 per ton, there is a large field for this new "electric furnace graphite," and a good business is being built up.

#### **The Castner Sodium Process.**

H. Y. Castner is also the inventor of two processes which are operated at Niagara. His process of producing metallic sodium by the electrolysis of fused caustic soda kept within 5 to 10 degrees of its melting point is one of the most striking of electrolytic processes. If the temperature goes to 15 degrees above the melting point resolution of the sodium is as active as the electric decomposition and no metal is obtained. Since the metal is lighter than the electrolyte, it floats to the top, where it is kept inclosed by an air-tight lid and removed by perforated ladles, which allow the caustic soda to drain through, but retain the sodium because of its surface tension. A cylinder of metallic gauze hangs between anode and cathode, to prevent the minute globules of metal projected actively from the cathode from getting over to the anode and being re-oxidized. The apparatus and process abound in such really brilliant devices and methods of working. Eight hundred amperes pass through a large number of pots in series, each only 12 to 15 inches in diameter. The yield is comparatively large, considering the difficulties of the operation; and the process has been so successful that the 750 horse-power plant was doubled last year.

#### **The Castner Caustic Soda Process.**

The caustic soda process of Mr. Castner is likewise one of the most brilliantly worked out electrolytic proc-

esses in existence. It is in a different field from all those previously described, being concerned with the electrolysis of a solution of common salt, the utilization of the evolved chlorine for making bleaching powder, the absorption of the metallic sodium by a liquid mercury cathode as it is isolated by the current, and the decomposition of this amalgam by water in a separate compartment. The amalgam is moved from the first cell into the second by the rocking of the cell sending it under the dividing partition, while the same current (or about 90 per cent. of it) which does the charging does the discharging of the amalgam. A typical cell is 3 feet by 4 and 6 inches deep, and works with 600 amperes of current, at 5 volts. The efficiency is 90 per cent. Fifty-four such cells in series are worked by a 200-horse-power current, and ten such units work side by side in one large room 200 feet square. This plant is being tripled this year. The cells are made of slate, fastened by a rubber cement; the anodes are graphitized carbons, the cathode a sheet-iron grid. The process is so successful that the makers can sell caustic soda at a profit at the cost to other manufacturers. Their enlarged capacity will be to treat 35 tons of salt per day.

#### **The Manufacture of Carbide.**

The manufacture of various other products at Niagara received necessarily limited mention. The Union Carbide Company use variably 5000 to 10,000 horse-power, making calcium carbide in huge revolving furnaces 8 feet in diameter by 2½ feet wide, which revolve slowly. The carbide made, if perfectly pure, produces acetylene by reacting on water.

The Ampere Electro-Chemical Company are a company who investigate and develop processes. They have been eminently successful, and promise greater things for the future. Professor Richards referred to the recent description of the company's work by their superintendent, Chas. B. Jacobs (formerly a Lehigh student) before the Institute of Electrical Engineers.

#### **The Salom Lead Reduction Process.**

Professor Richards closed his lecture by referring to the process of Pedro G. Salom for reducing lead sulphide ore to spongy lead, operated by the Niagara Lead Reduction Company. Thirty pounds of finely ground purified galena is put in the bottom of a lead pan, dilute sulphuric acid placed on it, the bottom of another pan dipping into the acid acting as anode, while the galena itself is cathode. The acid being decomposed by a gentle current of 30 to 40 amperes, the hydrogen set free at the cathode decomposes the galena, forming hydrogen sulphide and leaving spongy lead, which is washed with water to remove stone and gangue, and is very nearly pure lead. The gases can be converted into sulphuric acid. It is expected that the operation of this process will supply cheap sponge for storage battery plates and as a starting point for making lead salts. The plant will consist of ten rows of such cells and will, when complete, be able to make 10 tons of sponge a day. The electrical machinery is interesting, being a motor belted direct to a dynamo, thus eliminating all transformer machinery and giving greater flexibility to the arrangement.

A special meeting of the Board of Directors of the Chamber of Commerce of Pittsburgh was held last week. The meeting was called to hear the report of the Executive Committee on the advisability of extending an invitation to the National Manufacturers' Association to hold their next annual convention in Pittsburgh. The Executive Committee reported favorably on the matter and recommended that the representatives of the Chamber appear before the Manufacturers' Association at their next meeting, which will be held in Indianapolis on April 15, and press the claims of that city.

The report that the Sharon Steel Company would build 400 more houses in Sharon, Pa., to be occupied as homes for their employees, is incorrect. The matter is under advisement, but no definite decision has been reached.



## Canadian News.

### The Budget Speech.

TORONTO, March 29, 1902.—Mr. Fielding's budget speech was disappointing to certain manufacturing groups. There had been sundry favorable omens of further protection. Mr. Tarte, another member of the Cabinet, had declared himself a believer in the policy of high duties in the interest of home industry. Mr. Campbell, who stands high on the ministerial side, had expressed in a recent speech his belief that there would be a departure toward higher protection. But when the budget came down the Finance Minister informed the House that there would be no tariff changes this session. He did not reaffirm, however, the anti-protection principle, but gave as his reason for leaving the tariff alone the fact that there is to be a conference in London next June at which the question of trade relations among the colonies and with the mother country will be discussed. But Sir Richard Cartwright, the Minister of Trade and Commerce, the member of the Government who has given the most attention to Canada's fiscal affairs, made a speech in the budget debate in which he came out as strongly as ever against protection. There is certainly nothing cast iron about the Government's trade policy. It is plastic enough to be shaped on short notice in accordance with the mood of the country. If a protectionist sentiment should suddenly become aggressive with the majority of the people apparently actuated by it the duties would probably be raised. If, on the other hand, agricultural depression should come upon the country, there would doubtless be another scaling down toward free trade.

### The Colonial Conference in London.

The conference to be held in London has been arranged for by Mr. Chamberlain, the British Colonial Secretary. He desires to take advantage of the presence of the colonial premiers in London at the coronation in order to discuss matters of common concern, especially matters relating to trade and defense. His invitation to Sir Wilfrid Laurier has been accepted by the Dominion Government, but with an intimation that, so far as this country is concerned, the discussion ought to be limited to trade questions. It is thought that the conference may be more fruitful than the one held in London five years ago, when the colonial premiers were at the jubilee festivities. At that time Mr. Chamberlain was willing to entertain the idea of free trade within the empire, leaving each country under the British flag at liberty to adopt what tariff it pleased toward the rest of the world. But the arrangement was unacceptable to the colonists, and was opposed in particular by Sir Wilfrid Laurier, who held that Canada could not yet afford to admit goods from all parts of the empire free of duty. Its revenue requirements, not to speak of the needs of its industries, precluded such a concession. At present it is believed the imperial statesmen are willing to consider terms somewhat more to the colonies' liking.

An engagement has been made for another trade conference on the same occasion in London. This is between the representatives of the Dominion of Canada and of the Australian commonwealth. Sir Wilfrid Laurier proposed it and Mr. Barton, the Australian premier, acceded to the idea. An exchange of preferences may be the result. At present Australia has the benefit of Canada's preferential tariff. Really that advantage had been conceded only to New South Wales, but when the Australian colonies became federated, the Canadian Government concluded that for the time being the privilege might be allowed to the whole of Australia until it should be decided whether there was to be any reciprocity between the two British federations. With the idea of promoting closer trade relations between them, Mr. Murdock, the Canadian Postmaster-General, while in Australia at the inauguration of the Commonwealth Government, submitted certain proposals to that Government, which it agreed to take into consideration. The conference will bring out its views in respect to them.

### British Columbia's Want.

A deputation from British Columbia waited on Sir Wilfrid Laurier and Mr. Fielding the other day. William Buchanan, representing the Associated Boards of Trade of the Province; W. H. Aldrich, representing the smelting interests, and James Cronin, representing the mining industry, composed the deputation. They asked that the annual bounty of \$100,000, which was provided for last year by Parliament at the rate of \$5 a ton, be expended fully this year, even if the output of refined lead comes no nearer the required 20,000 tons than 14,000 tons. At present, they say, there is no prospect of 20,000 tons being produced. Practically they want \$7 a ton in place of the statutory \$5 per ton. They also asked that the duty on pig lead be increased from 15 per cent. to 20 per cent. ad valorem. A third petition was that the 50,000 acres of Crow's Nest coal lands reserved by the Government be placed in the hands of an independent company bound to a maximum charge of \$1.75 per ton, f.o.b., and \$3.50 for coke.

### The Alleged Sale of the Sudbury Works.

Thomas W. Gibson, Director of the Ontario Bureau of Mines, was asked as to the truth of the report that the mines and works of the Canadian Copper Company had been purchased by the United States Steel Corporation. He said he had no official information on the subject, nor had he heard that the works had been shut down, except very partially on account of a coke shortage some time ago.

### Nova Scotia Steel & Coal Company's Earnings.

The annual meeting of the Nova Scotia Steel & Coal Company was held at New Glasgow, N. S., on Thursday. The annual report shows that the profits for the year ended December 31 were \$508,936.79. To be added to this is a balance at credit of the profit and loss account of the Nova Scotia Steel Company amounting to \$242,030.24. Thus the total surplus was \$750,967.03. Of this \$93,237.84 went to pay interest on bonds, \$41,200 to pay dividends on preferred shares to July 1, 1901; \$41,200 to pay dividends on preferred shares for the second half of 1901; \$100,000 went to the revenue fund for plant depreciation, renewals, &c., and 5 per cent. was paid on the common stock, leaving \$351,000 to be carried forward to the profit and loss account. The directors recommend that so long as the earnings justify dividends on the preferred shares be paid quarterly, and on the common half-yearly. The company mined and disposed of 350,000 tons of iron ore, 238,000 tons of coal, and 26,000 tons of limestone and dolomite. Upward of 52,000 tons of pig iron and steel ingots were produced during the year. The directors elected were John F. Stairs (president), James D. McGregor (vice-president), Graham Fraser (managing director), J. Walter Allison, Thomas Cantley, Harvey Graham, R. E. Harris, Hon. L. Melvin Jones, J. C. McGregor, George F. McKay, Hon. J. S. Pitts, Robert Reford, George Stairs, Robert Jaffray and John McNab.

### Progress at the Sault.

F. H. Clergue was at the Parliament buildings, Toronto, some days before the close of the session of the Provincial Legislature to invite members of the Government to witness the process of steel making at his new plant. He expects to be turning out 700 tons per day in a very short time. He says there are 6000 men now at work on the syndicate's various enterprises, and that the number will probably be increased to 10,000 by mid-summer. A considerable portion of his Manitoulin & North Shore Railway is to be built this year. He also expects that the whole of the 225 miles of the Algoma Central Railway will be finished this season.

In Montreal, he states that his company have orders for steel rails that will keep them busy till the end of the year. On account of the large business in hand arrangements are being made to increase the capacity of the rolling mills. While in New York he saw the manager of the company who propose to build a high level bridge from Montreal to Longueuil, and he decided to put in a tender for the material. Had it not been for unavoidable delay in the receiving of the machinery, his

works, he says, would have been running some time ago.

Mr. Farte, Minister of Public Works, stated some days ago in the Dominion House that 15,000 tons of steel rails had been purchased for the Intercolonial system since the contract with Mr. Clergue was entered into. Also he said the Clergue contract had not been canceled, nor the time for delivery extended.

#### Railway Orders.

The report that the Grand Trunk Railway Company had gone to the German market for rails is denied. An order has been given by that company for 25,000 tons of rails to Charles Cammel & Co., an English firm.

The Canadian Pacific Railroad have given an order to their Hochelaga shops for 20 first-class cars and 1000 additional box cars and six sleepers.

Twenty-five locomotives, 100 coal cars and 300 flat cars are being built for the Grand Trunk in their Montreal and Stratford shops.

#### Minor Notes.

Mr. Blair, Minister of Railways and Canals, stated in the House the other day that the freight rate on pig iron carried by the Intercolonial Railway from Sydney to Montreal was \$2.95 per ton, and \$2.55 per ton for coal. These rates are both conditional on return box cars being used.

Work has been commenced at Niagara Falls by the Ontario Power Company.

The Ontario Retail Hardware Merchants' Association held its regular meeting in Toronto a few days ago. A letter from the wholesale jobbers expressing hearty approval of the objects of the association was read.

Letters of incorporation have been granted to Mackenzie, Mann & Co., Limited, with a capital of \$5,000,000.

The Imperial Rolling Stock Company, with a capital of \$1,000,000, have been incorporated under Ontario laws. The head office is to be in Toronto. C. A. C. J.

## The Eight-Hour Bill.

### Extending the Emergency Clause.

WASHINGTON, D. C., April 2, 1902.—The House Committee on Labor on the 27th ult. devoted another day to the consideration of the pending eight-hour bill, the discussion being confined to certain amendments to the proposed bill for the purpose of extending the emergency clause so as to render the measure more practicable. Little or no progress was made in this direction, however, but the fact was made apparent that at least a strong minority of the committee favored modifications so comprehensive as to make the bill wholly unsatisfactory to the representatives of organized labor, who are now engaged in the effort to secure a favorable report upon the original draft of the bill.

The situation in the committee has undergone a perceptible change during the past week, which encourages the opponents of the bill to hope that it may be adversely reported or that it may be so amended as to prove harmless. In the first place, through the unseating of Representative Rhea of Kentucky, the committee has lost one of the most ardent advocates of the bill, and it is unlikely that the vacancy will be filled in time for the new member to vote upon the measure, especially as considerations of propriety might restrain him for the reason that he had not heard the evidence submitted.

In the second place, the impracticability of the bill has become daily more apparent to the more conservative members of the committee in the effort they have made to so amend the measure as to make proper exceptions to cover mechanical emergencies. The fact that the labor leaders have opposed all amendments has operated to weaken their position and to cause fair minded members of the committee to look with disfavor upon the entire eight-hour movement.

In addition to again canvassing the proposed amendments described in these dispatches a week ago, the committee, on the 27th ult., discussed the propriety of providing in the emergency clause that the proposed

law should not apply to mechanical operations where its enforcement could be clearly shown to cause financial loss. The opponents of the bill believe that such an amendment would meet the principal objections heretofore raised to the measure, but the labor representatives are unwilling to go so far, asserting that such a modification of the bill would completely nullify it. It was stated at the last meeting of the committee that Representative McCleary of Minnesota would present several emergency amendments at the next meeting, and as he has shown a disposition to harmonize the conflicting interests before the committee his propositions are looked forward to with considerable interest.

#### The Lovering Resolution.

While the Committee on Labor is engaged in discussing the eight-hour bill the Committee on the Judiciary has been called upon to give its attention to a joint resolution drafted by Representative Lovering of Massachusetts, designing to provide an amendment to the Constitution giving Congress power to establish uniform hours of labor in manufacturing industries throughout the country. Mr. Lovering's resolution indicates in the preamble the main spring behind its movement, and is as follows:

"Whereas, Under State regulation there now exists and must always exist great diversity in the hours of labor in manufacturing establishments, as fixed by law or custom in the several States of the United States, the present variation in the working week being from 58 to 72 hours; and

"Whereas, This variation in the length of the legal working week creates conditions of discrimination as between the citizens of the several States of the Union which operate to the disadvantage of both labor and capital in many localities, resulting in unequal earnings for a given amount of capital, and unequal wages for a given amount of labor, which unequal conditions are contrary to the fundamental theory of the Constitution of the United States, which contemplates equal rights and uniform privileges to all citizens of the United States, irrespective of the particular State in which they may happen to dwell; and

"Whereas, This lack of uniformity in the hours of labor is the outcome of State legislation, and is beyond the power of the States, acting through their Legislatures, to make uniform, by reason of the decision of the Supreme Courts of several States to the effect that all laws regulating hours of labor are unconstitutional in those States; and

"Whereas, Unequal and partial restrictions disturb the equilibrium of industry and are serious obstacles to national progress; therefore,

"Resolved, By the Senate and House of Representatives of the United States of America in Congress assembled (two-thirds of each House concurring therein), that the Congress of the United States do recommend to the several States of the Union the adoption of the following amendment to the Constitution of the United States, to wit:

#### "ARTICLE XVI.

"That Congress shall have power to establish uniform hours of labor in manufactories throughout the United States."

At Mr. Lovering's request the Committee on the Judiciary, on the 27th ult., gave him a hearing on the above resolution at which he argued at some length the alleged importance of equalizing the conditions of labor throughout the country. His contentions were based chiefly on humanitarian grounds, but the questions propounded by the members of the committee indicated a very clear conception on their part that the real purpose of the resolution was to bring about a reduction in the hours of labor in the cotton manufacturing industry of the South with a view to enabling New England manufacturers, whose hours of labor are limited by strictly enforced State laws, to compete on more equal terms with their Southern rivals. Mr. Lovering has urged a similar measure in previous Congresses, and it is the best opinion here that the Judiciary Committee will not be disposed to report this resolution with a favorable recommendation.

W. L. C.



## Scientific and Technical Notes.

The Westinghouse Machine Company are now designing steam turbines of 6000 horse-power. The Metropolitan District Railway (London) has provision in the new central power house for ten steam turbines of about the same capacity, and it is a natural inference that the turbines being designed at Pittsburgh are intended for this station, though this has not yet been announced. It is said that the largest steam turbine now in use for stationary purposes is the 3000 Westinghouse-Parsons turbo generator at Hartford, Conn. This runs at 1200 revolutions per minute, while it is understood that the 6000 horse-power machines are to run at about 750 revolutions per minute. W. A. Bole, superintendent of the Westinghouse Machine Company, states some of the leading advantages of the steam turbine to be that it requires less water, less room, less foundation than any reciprocating engine of equal horse-power, and he predicts the extensive introduction of this type of prime mover in electric stations. The steam turbines are peculiarly adapted for driving alternating current generators in parallel on account of their perfectly uniform angular velocity. Whatever the difficulties in application of turbines may be, they entirely avoid two of the inherent defects of all reciprocating engines—viz., cylinder condensation and variation in angular velocity of the shaft during the revolution. Multiple expansion reduces the former and heavy fly wheels decrease the latter defect in the reciprocating engine, but these experiments only ameliorate what is eliminated in the steam turbine. The enormous reduction in the size of the electric generator (due to the high rotative speed) is one of the important advantages gained by using the turbine.

Notwithstanding the threats of the steam turbine, there remain many who have confidence in the permanency of the reciprocating type of engine. Edwin Reynolds refers to the extensive new shops now under way by his company as evidence of its faith. Mr. Reynolds expresses the opinion that the practical limit has probably been almost reached in the capacities of reciprocating engine units—viz., about 2500 horse-power per cylinder, or 5000 horse-power for the ordinary two-cylinder compound engine. He is quoted as saying: "It is doubtful whether this will be much exceeded, if at all."

A symposium on electro-chemistry and electro-metallurgy was recently held by the American Institute of Electrical Engineers. C. B. Jacobs discussed some of the remarkable products of the electric furnace, of which calcium carbide is the best known. He suggests that calcium carbide may attain greater importance as a reagent in manufacturing chemistry than in the production of acetylene. It is a powerful dehydrating agent and may come into extensive use for extracting moisture.

The silicides of calcium, barium and strontium are formed in the electric furnace at somewhat higher temperatures than those required to produce the carbides. The silicides decompose with water and yield free hydrogen in a pure state.

It was said in the course of this discussion that these silicides promise to become important in the steel industries through their actions on sulphur and phosphorus. It is stated that by use of these silicides sulphides and phosphides are formed which are eliminated in the slag, and that an iron high in sulphur and phosphorus yielded by this treatment a steel from which the last traces of sulphur and phosphorus were removed.

Professor Holborn of Berlin has constructed laboratory electric resistance furnaces in which a temperature of 1500 degrees C. (2700 degrees F.) can be maintained. The electric current is conducted through resistance coils, which are wound around thin porcelain tubes. With platinum windings 1500 degrees C. can be attained, while nickel coils permit a temperature of 1000 degrees C. Resistance in the external circuit

affords means for control of the temperature within certain limits. This form of furnace would seem to be very convenient for certain laboratory operations, permitting control of the temperature and affording means of heating substances without exposure to the gases of combustion.

According to reports of experiments recently made at the Worcester Polytechnic Institute the specific heat of brick is 0.23.

At the recent meeting of the American Physical Society F. L. Tufts gave an account of his investigations on "The Transmission of Sound through Solid Walls." The experiments were undertaken to determine the best construction for telephone booths. The following brief summary of the work is quoted from the report published in *Science*, by Prof. E. Merritt, secretary of the society: "The results were in many respects different from what would probably be anticipated from a hurried consideration of the case. For example, a wall of sheet lead, in spite of its great density and its lack of elasticity, was found to transmit much more sound than a glass wall of equal thickness. Two walls separated by an air space were no more effective in cutting off sound than the same two walls in contact. The results indicate that the sound is transmitted in such cases by the forced vibration of the wall as a whole, not by the elastic waves carried through the wall. Other things being equal, that medium which yields most to pressure steadily applied will transmit best."

Experiments just completed at Sibley College, Cornell University, by H. F. Moore and E. Schlemmer on "A Radiator Test with Superheated Steam" confirm previous results as reported by Professor Carpenter—viz., that the heat transmitted per degree difference of temperature between entering steam and the air of the room is decreased as superheating is increased. This general result is not particularly astonishing, but a record of the tests may be of some interest.

### Summary of Tests.

	Number of trial.					
	1.	3.	5.	6.	7.	8.
Steam pressure, absol.	16.01	16.8	17.65	17.14	17.56	17.85
Degrees superheat....	0.0	26.9	56.0	87.9	104.9	124.3
Heat radiated per hour						
per degree.....	41.55	34.74	30.0	24.5	24.22	21.7
Same per square foot						
surface .....	1.405	1.173	1.014	0.827	0.819	0.734

### Ceylon Plumbago Advancing.

In 1899 an interesting movement took place in the market for plumbago in Ceylon, which is the principal source of supply of the graphite industry of this country. There was a very sharp advance. The natives, who are alone able to conduct mining operations in the unhealthy regions of Ceylon, where the mineral is found, made so much money on the advance that production instead of being stimulated was lessened. During the years 1899, 1900 and 1901 the market fluctuated, occasional declines being followed by sharp rallies, thus keeping buyers and crucible makers in particular in a constant condition of uncertainty. Now, however, a sharp upward movement has again taken place. During the last four or five weeks there has been a rise of 35 to 40 per cent. above the figures which ruled two months ago. These prices concern chiefly good stock for the making of crucibles for brass and steel melting. There are reports of scarcity of supplies, and intimations are sent out that the miners have combined and are restricting the output. However that may be, the fact remains that prices are again seriously high.

The March returns of incorporations of large companies in New Jersey, Delaware, Maine and New York having a capital of \$1,000,000 and over show a considerable decrease in capitalization as compared with February, the total declining to \$158,150,000 from \$294,850,000. In January the figures were \$146,950,000. The largest concern incorporated last month was the International Nickel Company, with a capital of \$24,000,000.

# The Iron Age

New York, Thursday, April 3, 1902.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHERS.
CHARLES KIRCHHOFF,	- - - - -	EDITOR.
GEO. W. COPE,	- - - - -	ASSOCIATE EDITOR, CHICAGO
RICHARD R. WILLIAMS,	- - - - -	HARDWARE EDITOR.
JOHN S. KING,	- - - - -	BUSINESS MANAGER

The Pittsburgh office of *The Iron Age*, Robert A. Walker, manager, has been removed to 1201 Park Building.

## Great Britain's Pre-eminence on the Sea.

Time has wrought many changes since Jean Paul Richter was impressed with the idea that Providence has given to the French the empire of the land, to the English the empire of the sea and to the Germans empire over—the air. The French have relinquished dominion over the land for the scepter that is all powerful in the realm of fashion, and its decrees are no less inexorable than the law of the Medes and Persians. The Germans long since crystallized their nebulous theories and now give much more attention to things physical than to things metaphysical. But the English have continued to the present moment, supreme over the sea. That a change is imminent, however, is evident, and for that reason there is a flurry in shipping circles in Great Britain; the Union Jack is threatened on the high seas. The American invasion is not confined to land locked harbors, but as an element of success carries with it the ocean traffic; American goods in American bottoms to meet international competition.

There can be but little doubt, if we take a comprehensive view, that the future holds supremacy in store for American enterprise. Sooner or later the world's center of commerce and finance will have passed from the Thames to the Hudson, as it previously passed from the Seine to the Thames, subsequent to its passage from the Tiber to the Seine.

In the meantime there will be a battle of the giants, and the forces now gathering in a combination of industries, in a concentration of transportation interests by land and by sea, are but the elements which are to contribute to change the currents in the ocean of commerce.

One of the most interesting articles having a bearing upon the subject appears in the *Fortnightly Review* for March, in which it is shown that British shipping is facing a serious crisis, being threatened by the power exercised by American capitalists, now competing in the transatlantic carrying trade, aided by Government subsidies. The main points of the writer's argument are of significance, in that the most experienced ship owners are perplexed by the problem presented for solution.

Keen competition in the shipping trade is no new thing, but never before has the ship owner of Great Britain been called upon to face such a combination of strong factors as he must if the Ship Subsidy bill now pending in Congress becomes a law.

"Until now Americans scarcely can be said to have taken any part in the competition for oversea commerce. They have certainly taken no distinctive part. The Germans and the French—the former with steamers and the latter with sailing ships, and both with subsidies—have been more aggressive than Americans. The energies of the United States have been directed mainly to the building up of home industries and to the exclusion by high tariffs of foreign manufactures from the Ameri-

can market. That work has been accomplished. American manufacturers can now do more than supply their home market. With them commercial expansion has become a necessity, and they therefore are turning their attention to the oversea trade as they never have done before."

The English writer—Mr. Wetherell—points to the purchase of the Leyland Line by Mr. Morgan and associates as the introduction of the new conditions, Mr. Morgan being not a ship owner, but a representative of a body of capitalists who have acquired possession of great trunk lines of railroads in the United States, and also the representative of the combine which is powerful in the iron and steel industries of the country. "The precise extent to which his (Mr. Morgan's) influence reaches over the internal trade of the United States and over the railway systems of America is not known, but it is enormous. His shipping deal has been entered into as a part of a great and ambitious movement to gain control over both the internal and the external trade of the United States, and to overbear all foreign competition. He will pursue that object in the American fashion."

Mr. Wetherell further asserts that Mr. Morgan purchased the Leyland Line at a very high price—a price upon which, under ordinary conditions, he cannot hope to earn a reasonable return—but that it gives him a standing among great shipping companies. "If he desires to purchase other British shipping companies' businesses he can present them with the alternative of ruinous competition, or of purchase on terms that will give them a handsome profit."

Attention might be called, however, to the fact that American methods are what may be termed constructive, not destructive. It is inconceivable that Mr. Morgan would coerce foreign shipping by inaugurating a rate war on the ocean. The policy pursued by Mr. Morgan and his associates in the past precludes any such system from being exercised at present or in the future. It would seem more reasonable to expect the adoption of some such policy as has proved peculiarly effective with railroad properties in the United States for higher efficiency, reduced operating expenses, resulting in lower rates.

Mr. Wetherell argues that to sell British ships at prices far above their market value to the confiding and hypothetical American capitalists would be very good business, adding to the wealth of Great Britain and permitting the building of faster and better ships to compete with the old vessels previously sold.

Or, "if the Americans in their efforts to sweep aside British maritime competition should carry food and produce at abnormally low rates, British home industries would reap the benefit in the lowered cost of living and in cheap raw material." American industries would then be less able to compete with British manufacturers in the markets of the world. If, he continues, Americans sought to push export business at the expense of prices industrial profits would disappear, which could not be equalized other than by advancing carrying charges, which would redound to the advantage of the British shipowner. From which he concludes: "Every principle of free trade, in fact, cries aloud against the assumption that J. Pierpont Morgan, no matter what combination he may have at his back, can permanently override economic laws and defeat British ship owners in an enterprise that is peculiarly their own."

Waving aside the theory that Americans would be tempted into destructive rate competition, and relegating the idea of a British combination of industrial and transportation interests to meet the prevailing conditions in this country to the background as impracticable—because



the coveted trade originates in the United States—the conviction is forced upon the open mind that, while there is not to be a sudden or marked revolution in the shipping industry, the seeds of a gradual transition of control from British to American hands have been sown. This is the more certain, because the future of the American export trade is intimately connected with, if not entirely dependent upon, transportation facilities—direct routes and low rates.

Mr. Wetherell sums up the danger—which is not the less real because insidious—to British shipping as follows: "The essential thing is that the nation should realize that in the great struggle for commercial pre-eminence upon which the United States is entering the conditions of the contest will place British private interests at a disadvantage, and that a commercial system that suffered in other circumstances can no longer be depended upon. If the British mercantile marine is to continue to hold the first and most commanding position on the ocean the national policy must be so framed as to prevent it being pushed from that position by foreign subsidies."

### Competition Which Upbuilds and Benefits.

The benefit which one branch of business often experiences from the development of another which seems at first to threaten a hurtful, if not destructive, competition, has often been illustrated in ways which show how fallible is business judgment.

It will be remembered that when the electric light materialized in a form making it practical for house and general illumination there was a serious panic in gas stocks. Many who had found gas investments profitable hastened to sell their stocks at almost any price offered, and those who bought them made money very easily. The greatest era of development and prosperity which the gas industry has known began with the introduction of the electric light, and was directly and obviously the result thereof. Previous to that time a restricted competition necessitated the charging of a relatively high price for gas, and as it was a better light than had been previously known the average consumer was extremely economical with it. One burner sufficed for the general illumination of a room, and two made it effulgent. Only on state occasions was anything like a generous illumination deemed necessary or desirable, and gas was regarded as something of a luxury, suited only for the chief apartments of the rich, or well to do. It was the natural conclusion of those who held gas stocks that a new light which did not vitiate the air of apartments would be preferred, and that gas must follow the candle and the sperm oil lamp into the limbo of disuse. But this was not the result. It was found that as the use of the electric light spread the consumption of gas increased. In all places of public assembly, in stores and even in the streets, light blazed with increasing brilliancy, and even the economical consumer could not tolerate the dimness and gloom of the badly lighted apartment. As the consumption increased the cost of gas declined; as more light was demanded better and more efficient burners were introduced. The movement has not yet culminated. As the more liberal use of electricity makes our cities brilliant at night and all who dwell therein become accustomed to brightness, the use of gas increases. Instead of destroying the gas industry electric lighting has given it the most powerful impetus it could have had, and its present prosperity is due to this competition in larger degree than to any other cause.

Another phase of the benefit derived by the gas indus-

try from electrical competition is also an outgrowth of the fear that electric lighting might hurt it. When it seemed to be threatened the gas companies bethought them of expedients for increasing their output for purposes other than lighting. This led to developments in the lines of heating and cooking, and made the day consumption very important.

Another illustration of the working of the same rule is found in the effect of the development of interurban electric communication upon the business of the steam railroads. Experience through a very short period established the fact that with the trolley lines the steam railroads could not compete for passenger travel between towns and cities separated by relatively short distances. It cost so much less to move a passenger a mile by electricity than by steam, owing to the smaller investment in permanent way and equipment and the less proportion of dead weight per carload over that per train load, that under conditions rendering the trolley car practicable the railroad train was impracticable. In no respect could the steam railroad meet the requirements of interurban travel as cheaply or as satisfactorily as the electric road, and as a consequence the multiplication of electric roads began to be a serious menace to the volume and profit of the local business of the steam roads with which they came directly into competition. This menace was made good in the diversion of an immense amount of local business from the steam to the electric railroads; but the net result seems to have been in a large degree beneficial to the steam railroads. If they have less travel for short distances which did not pay them, they have more travel for longer distances which does pay them. The electric railroad, with its high speeds and low fares, is getting people into the habit of traveling to a much greater extent than formerly. This habit leads them to move through areas of constantly increasing radius. The former comparative isolation of rural communities is broken by the inducements for intercommunication. People who become accustomed to riding 5 or 10 miles frequently, go 20 or 50 miles much more easily than formerly. Thus it appears that what threatened to do the steam railroads great harm has in reality done them great good, through accomplishing what appeared to be a most dangerous invasion of their field of business.

Illustrations of this kind might be multiplied indefinitely. They all point in one direction, and from them the basis truth may be drawn that while "revolutions" are going on all the time they very seldom displace anything of real utility, any more than labor saving machinery displaces labor. It sometimes forces men to change their occupations, but as it increases the demand for labor it throws no man into involuntary idleness and usually better the condition of those released from work which can be as well or better performed by machinery.

**The Steel Production of Germany.**—Statistics compiled by Dr. H. Rentsch for the Association of German Iron and Steel Manufacturers show the production of steel ingots for 1901 to have been as follows, in metric tons:

Ingots.	Acid.	Basic.	Total.
Bessemer .....	299,816	3,975,070	4,274,886
Open hearth .....	125,590	1,886,536	2,012,126
Castings .....	39,634	67,576	107,210
Total 1901 .....	465,040	5,929,182	6,394,222
Total 1900 .....	422,452	6,223,417	6,645,869

It will be observed that there has been a moderate decline in production in 1901. One of the surprising features of the report is the large quantity of basic open hearth steel produced.

## CORRESPONDENCE.

### Protecting Steel Frames.

To the Editor: In your issue of *The Iron Age* of this date, page 27, you call attention in a mild way to the danger, not possibly immediate, but not beyond the life of some architects now specifying steel frame structures. The attention called to this matter by General Wm. Sooy Smith in Chicago, to which you refer, is timely.

Is it sure that the steel frames (footings in particular) are fully protected, even if incased in walls of concrete, and are proof against damp air and unavoidable condensation, consequently corrosion? When this is done, would it not greatly improve conditions to resort to the well-known protection of a zinc coating in addition to the casing in walls and cement? That metal, it is well known, is self protective in case of exposure to moisture and air by the natural formation of an oxide. It is known to last for centuries where there is no possible abrasion to remove this formation. This would be the case, as steel frames are now built in.

I have an item taken from your paper about the year 1881. My reference is March 29, page 23, but the year is not plain and you say that the matter was from German authorities. You were referring to galvanized iron or zinc roofing, where no abrasion would take place from heavy wash or other cause to remove the natural formation of the protective oxide. I quote: "One-fiftieth inch of sheet zinc will occupy 1243 years in complete oxidation. A weight of 130 grains spread over the surface of 1 square foot would make a layer only 1-5000 of a line thick. There will be 46.04 such layers, and this multiplied by 27 gives 1243, the total number of years."

The natural coating by the hot process of a steel frame would, I understand, be at least 1-32-inch thick. From this it is easy to draw inference of the lasting quality of a galvanized steel frame against moisture from unavoidable condensation.

There are plants with capacity sufficiently large now doing business where this zinc coating could be applied after parts of the frames are made up at only a very small additional cost to the whole frame. For the parts below street level, and for so comparatively small cost, would not such additional protection be wise?

FREDERIC CHASE.

PHILADELPHIA, PA., March 26, 1902.

### Great Britain Heading for Protection.

LONDON, W. C., March 8, 1902.—Without attaching undue importance to it, it would still be futile to ignore the fact that the protectionist party in Great Britain is holding up its head again and fighting hard for the reimposition of tariffs upon all foreign imported goods. That in itself would not be serious, because, after all, there has always been a body of energetic protectionists in England, but it must also be noted that the old free trade party, which has been dominant in the councils of the nation for the last 50 years, is going to pieces, dissolving to assume fresh forms and pursue different policies. The Colonial Secretary, up to a few years ago, was a pronounced free trader. He has now changed his creed, and is striving hard to realize something in the nature of a Zollverein. Immediately after the coronation festivities a council of colonial statesmen is to take place, and it is freely stated, and indeed admitted by Joseph Chamberlain himself, that the question of free trade within the Empire and a protective tariff upon all other imported goods will be discussed in all its bearings. I do not think for one instant that the old question of free trade and protection could become a living issue in this country were it not for the new ideas of empire now rampant in our midst. A political spirit of defiance to the rest of the world now breathes over the country and has infused new ideas into our commercial magnates, who are now of opinion that, while England itself cannot be commercially a self contained country, yet the

Empire at large is equal to the occasion. It is at the present time a moot question how far the business men of the British colonies, particularly in Canada and Australia, are prepared to submit to preferential tariffs. My own view is that freedom to buy upon absolutely equal terms from all countries is a more deeply imbedded principle in business affairs in our colonies than people think. None the less, the purely political aspect of affairs may induce business men to go beyond commercial principles. The Colonial Secretary is now a man of immense influence, and as he is committed to the principle of a Zollverein, no one at the moment can tell how far he will carry the colonial Premiers with him. But the protectionists are only using the Zollverein as a handle. They are not particularly keen about the Zollverein, *per se*; what they want is the imposition of a protective tariff upon all goods coming to these shores, whether from the colonies or from foreign countries. That protection is much more popular than it was, say, ten years ago is evidenced by the fact that various Chambers of Commerce have now passed resolutions in favor of a protective tariff, while an active propaganda has been carried on among workingmen. Thus, within a few days, the signatures among workingmen have been obtained to a petition addressed to the House of Commons asking that a revenue import duty be imposed upon all foreign competing goods imported into the United Kingdom, the surplus thus accruing to the revenue being used for reducing or abolishing the duties upon tea, coffee and cocoa. In the city of Birmingham 35,000 signatures were obtained to this petition in a few days. In other centers of population a similar success met these hurried efforts. Thus, in Cardiff, 46 per cent. of the electorate; in Middlesbrough and Barrow, 45 per cent.; in Fulham, 35 per cent., and in Battersea, 44 per cent. of the electors, it is alleged, signed the petition. Even in Manchester, the Mecca of free trade, 11,000 signatures were obtained. This week also there has been held a convention under the auspices of the United Empire Trade League, in which protection, open and unashamed, has secured influential advocacy.

There are adventitious aids to this new movement. The South African War still drags its slow length along, is still lapping up money by the millions, and shows no immediate signs of ending. Every now and again a hopeful feeling pervades us that the end is near, but ever and anon we lapse back into the old feeling of hopelessness. There are more than one trained correspondents at the front who openly declare that there is no reason why the war should not be proceeding as actively 12 months from now. It is stated that Lord Kitchener does not anticipate a cessation of hostilities at least until June or July, but why that date is fixed I cannot conceive. Clearly, if the Boers can continue the resistance over the South African winter, they can wait until the grass grows again and continue fighting on the old lines. But my point is that all this costs money, which has to be found, and it is not unnatural that a great mass of people, who in times of peace would be free traders, would openly advocate a protective tariff for the payment of war expenses. The fact is that among the working classes free trade has always been accepted with an *arrière pensée*. They have been won over to free trade by the promise of the cheap loaf. Otherwise, it has been the middle class, and particularly the manufacturing section of it, who have been the main stay of free trade. Now the commercial section is changing its commercial outlook (or the commercial outlook is changing their opinions), and that makes a substantial difference from the point of view of the permanence of free trade. Thus, with enormous war expenses upon the one hand and a distinct change in commercial class opinion upon the other, free trade is not nearly so secure as the free trader himself might hope.

There is yet another reason for this change in economic opinion. When the free trade battle was fought and won England was *par excellence* the workshop of the world. Into our ports came raw materials from all parts, and our ships carried rich argosies of manufactured goods over every sea and into every port of the civilized world. It has now been borne in upon our minds that England is no longer the workshop of the



world; that the United States and Germany now follow us up point by point in the manufacture of practically everything; that other countries are becoming manufacturers on their own account to an extent undreamed of by Cobden and the Manchester school. France, Spain, Italy, Austria, Switzerland and Russia are all striving hard to establish some parity between their agricultural pursuits and their manufacturing industries. As it was assumed, rightly or wrongly, by the early free traders that free trade meant the industrial predominance of the world by Great Britain, and as this has now obviously proved to be inaccurate, it is argued that free trade is therefore a failure. Side by side with the old claim that free trade would make England the workshop of the world it was also contended that free trade meant the maintenance of peace and a gradual reduction of military and naval armaments. With the increase of our trade has come an enormous increase in our military and naval expenditure, and, indeed, the plea now for maintaining great armies and navies is not the protection of dynasties, but the protection of commerce. It thus comes about that the old claims and professions of the early free traders have been crushed out of all recognition by attrition of time. Intellectually, our commercial policy is again in a state of flux, and although personally I think that free trade will again be triumphant, yet we are in for a severe fight. In any event, it is of the utmost importance to American exporters to take time by the forelock and endeavor, as far as they possibly can, to protect their commercial interests in Canada, South Africa and Australasia.

#### Contracts and Free Trade.

It is interesting to observe, however, that, notwithstanding the influences that are brought to bear, particularly upon municipal bodies, to give contracts to home manufacturers irrespective of price, free trade still continues the policy of our public bodies. The latest instance of this is afforded by the London County Council contract for rails for the Council's tramways, involving the supply of about 3250 tons of track rails, 1850 tons of slot rails, 670 tons of conductor rails, 125 tons of fish plates, 155 tons of sole plates, with the necessary bolts, nuts and other accessories for electrical traction. The tenders were as follows:

Name of firm tendering—	Place of manufacture.	Amount of tender.
		£ s. d.
P. & W. Maclellan, Limited, Glasgow.	Société Anonyme des Acierles D'Angleur, Tilleur by Liège, Belgium	41,709 10 10
	or with special lock nuts.	41,742 4 4
Bolling & Lowe, London	Phoenix Works, Ruhrort, Westphalia, Germany.	42,897 10 0
Edward Le Bas & Co., London.	Ougree Works, Belgium.	42,935 0 0
P. & W. Maclellan, Limited, Glasgow.	Barrow Hematite Company's Works	50,463 15 0
Bolckow, Vaughan & Co., London.	At the company's works.	51,188 8 9
Walter Scott, Limited, Leeds.	Leeds Steel Works.	52,587 10 0
J. F. J. Peeters & Son, London.	At the firm's works (apparently)	58,381 5 0

Although great efforts were made to exclude the foreign manufacturers for this considerable contract, the firm of P. & W. Maclellan secured it, and have been duly appointed as subcontractors. S. H. G.

**Information Wanted.**—Who produces machinery for manufacturing well buckets?

The *Commercial and Financial Chronicle* has issued its final report on the gross earnings of the railroads in the United States for the calendar year 1901, the results covering 179,000 miles. The total was \$1,603,911,087 in 1901, as compared with \$1,454,922,185 in 1900, an increase of 10.24 per cent.

The contracting department of the Pittsburgh Division of the American Bridge Company has been removed to Room 826, Frick Building. Jos. A. Huston is the general manager.

#### Our Iron and Steel Exports and Imports.

The exports of iron and steel manufactures during January and February, while still under those made during the corresponding months of last year, give evidence of a more active movement than for several months. The Bureau of Statistics has just issued the summary of foreign commerce for the month of February, which shows that iron and steel manufactures were exported to the amount of \$7,358,296, against \$7,959,218 during February, 1901, a decrease of only \$600,922.

Since the first of the calendar year these exports have amounted to \$15,447,254, compared with \$17,569,770 for the corresponding months in 1901. Imports of iron and steel manufactures during the 28 days of February this year were \$1,768,303, against \$1,476,013 in February last year. Since January 1 the imports have been \$3,718,943, against \$2,790,916 for the corresponding time last year.

Taking up the showing for the two months in detail some interesting features are disclosed, and the concrete statement for the two months leaves the impression that notwithstanding the unprecedented activity in the domestic markets for the finished products of iron and steel, the needs of foreign consumers are not being neglected. Indeed, the promise seems to be held out, with the exception of steel rails and locomotives, of a material increase in exports during subsequent months reflecting the improved outlook abroad in the building trade, in the electrical industry and in other mechanical enterprises. This seems the more likely, as it is in keeping with the increased exports in other lines of manufacture. Much depends, however, upon the character of the orders upon the books of the various manufacturers, and the course of the market for both iron and steel directly influencing the cost of production of a host of manufactures which are prominent in our export trade.

While imports of iron and steel manufacture are shown to have increased since the opening of the year as compared with the year ago, the February returns indicate a smaller percentage than did the January figures.

The imports of iron ore since the first of the year amount to 7883 tons, valued at \$230,968, against 1202 tons, valued at \$48,414, during the corresponding time in 1901. During the same period of 1902 the exports of iron ore have been 316 tons, valued at \$1184, compared with 842 tons, valued at \$2290 in 1901.

Pig iron, which the Government classes among manufactures, was received from abroad during January and February of this year to the extent of 16,190 tons valued at \$411,506, against 3164 tons valued at \$113,727 in 1901. At the same time we exported 9696 tons of pig valued at \$161,033, against 30,067 tons valued at \$448,071, exported during the first two months of 1901.

During the first two months of 1902 our imports of bar iron exceeded our exports by 3,106,874 pounds—about 1387 tons—while during the first two months of 1901 our exports exceeded our imports by 8,365,627 pounds—about 3728 tons.

The imports of steel ingots, billets, blooms, slabs, &c., during January and February of this year exceeded the exports by about 7184 tons, while during the corresponding months in 1901 the exports exceeded the imports by about 21,995 tons.

The imports of wire rods in January this year were valued at \$76,949, but in February the imports fell to \$51,559. The reverse was the case last year, the imports amounting to \$48,396 in January, rising to \$93,850 in February.

Last year, during January and February, we exported 49,059 tons of steel rails, valued at \$1,400,096. This year the exports have fallen to 20,588 tons, valued at \$553,726; of this amount only 6202 tons were shipped in February, over half the quantity going to Europe, about two-thirds of the remainder going to Asia and to Mexico.

The falling off in the exports of locomotives has been as marked as the decrease in rail shipments, only 56, valued at \$548,400, being exported this year, against 128, valued at \$1,286,483, in January and February of last

year. The value of stationary engines exported, too, fell from \$83,013 in 1901 to \$68,676 in the first two months of this year. But during the same time the shipments of boilers and parts of engines rose from \$182,261 in 1901 to \$249,231 in 1902.

Among the notable increases in January and February this year were the exports of building hardware and tools, a gain of \$256,590; in metal working machinery, a gain of \$169,713; in typewriting machines, a gain of \$119,560. Also during February the exports of electrical machinery were valued at \$591,078, against \$566,494 in February last year, while the exports of cut and wire nails, including tacks, were valued at \$122,336, against \$105,291 in February, 1901. In sewing machines, too, there was a slight increase in the number and value of those sent abroad.

The exports of all manufactures during February this year aggregate \$31,740,842, against \$30,302,592 in February, 1901. The exports of copper, which are well to consider in connection with the foreign trade in iron and steel manufactures, were \$4,210,861 in February, 1902, against \$3,155,774 in February, 1901, the total exports for January and February this year being \$8,176,483.

### New Publications.

**Municipal Engineering and Sanitation.** By M. N. Baker, Ph.B., Associate Editor *Engineering News*. Publishers, the Macmillan Company, New York, 1902. Price, \$1.25.

Mr. Baker's work belongs to that class of books on technical subjects which it is a pleasure to read. It is intended as a review of the whole field of municipal engineering and sanitation, and not as an exhaustive study of the subject. It is divided into five sections: Ways and Means of Communication, Municipal Supplies, Collection and Disposal of Wastes, Protection of Life, Health and Property and Administration, Finance and Public Policy.

There is no doubt that were any city built, equipped and maintained in the manner set forth by Mr. Baker it would be an ideal place of residence, an urban Utopia; but that is no reason why actual municipalities should not strive for improvement on the lines indicated in this book.

The sanitary aspect of the common things about us, if one may so say, is constantly before the author. He points out that on street pavements, sunlight and desiccation are nature's germicides, and smooth dust forming pavements like asphalt or good brick are actually agents for bacterial destruction. This view, however, we think, predicated the necessity for the constant removal of such dust as is not blown away. Disease germs when deposited on pavements may adhere to the shoes of pedestrians, and to the skirts of women, who, through thoughtlessness, or ignorance of their danger, persist in wearing long dresses when in the streets.

Mr. Baker refers to the curious effects of electrolysis upon water and gas mains. The electric trolley, especially in its early days, used the earth as the return circuit, and the current seeking the lines of least resistance flowed in preference over these mains, with the result that in time decomposition set in, which eventually produced leaks and breakages. The chapters on water distribution and purification afford much food for thought. In dealing with water consumption and waste the fair and equitable proposition is put forward that the water meter should be a part of every house equipment, but he holds that the meters should be owned and repaired by the department, their first cost to be included in capital account, or their cost of construction and maintenance should be charged to operating expenses. The practice of charging consumers with the cost of, or repairs to, meters appears to us as unfair in principle as if a grocer should demand a small maintenance fee from his customers for the use of the scales upon which he weighs the tea he sells. Following the subject of pure water is that of the sanitary protection of the milk supply, and the health aspect of markets and slaughter houses.

Under the head of fire protection the question of having a supply of impure water for fighting fires, which cannot be used for domestic purposes, but which may be advantageously and inexpensively drawn from polluted sources, is discussed, but there is no debatable question concerning the fire department itself. Efficiency and character are insisted upon as the tests which alone should keep firemen and chiefs in office.

In housing the population of towns and cities two figures are given for the amount of fresh air requisite for each person. W. N. Shaw, an English writer, says 2000 cubic feet per hour are required for each healthy child in sleep to 9800 cubic feet for each adult at hard work. An American work lately published places the figure at 1800 cubic feet per person per hour. There are many places in our large cities where even the minimum figure is not maintained.

The author makes an interesting observation in the concluding section, where he deals with city charters. He says: "Whatever the city charter may or may not contain it should be so drawn as to insure the greatest possible measure of municipal home rule or freedom from that bane of city government—legislative interference. Unquestionably the meddling of State legislatures in local affairs is one of the greatest evils in the United States. This seems the more strange when we remember that it affects a large proportion of the people of a nation, which, in its early history, fought desperately for the widest measure of local self government." No particular type of charter or form of government is the cure all for maladministration of civic affairs. Regulations or enactments do not make men good. Law is but the ratchet wheel which holds at the required tension the righteous sentiment of any community, but it does not create that sentiment. Carefully worded charters will not insure good city government. That can only be had at the hands of honest, capable men.

This book, which contains 309 pages and a comprehensive index, is thoroughly readable all through. It contains a great deal of valuable information, and discusses municipal questions and engineering problems in a way which will appeal to the "man in the street," and the more he is in the street probably the better he will appreciate the book.

**Brass Founders' Alloys.** By John F. Buchanan. Publishers, Spon & Chamberlain, New York, 1901. Price \$2.

Mr. Buchanan, who is a practical brass founder, gives us in his book of 129 pages an introduction, six chapters and a comprehensive index. He writes in a very practical style as a man who knows whereof he speaks, yet relieves the monotony which such a book is apt to have by lighter touches here and there. He endeavors to present the practical features of the manufacturing of alloys on a commercial basis.

The introduction contains, with a few general observations, a table of the specific gravity, atomic weights, fusing points and weights per cubic foot, of the useful metals and the metaloids, phosphorus and silicon. In dealing with the uses of common metals the author quotes from Albert Sauveur, regarding the new science of "microscopic metallography," which has made great progress during recent years, and is destined to stand side by side with the chemical analysis of metals in importance and usefulness. The part played by the addition of very small quantities of such substances as phosphorus, carbon, silicon and arsenic to bronze, iron or lead is apparent in the wonderful change in structure and properties of these metals which this addition is able to bring about. Every alloy may be regarded as a new metal, as its properties are different from those of its constituents. Thus compounds containing bismuth are increased in density and fusibility. The combination of the two comparatively soft metals, copper and tin, in equal proportions produces the well-known hardening used in making antifriction metals and bell metal. Manganese combined with 6 or 7 per cent. of silicon gives an alloy which looks like manganese, but has far different characteristics. It does not oxidize, though pure man-



ganese oxidizes very readily. The author points out that the explanation of these facts, while at present mere scientific speculations, need not deter the worker in metals from grasping the significance of the phenomena and so laboring intelligently for practical and commercial results.

In the chapter on common methods of making alloys there is much useful information for the intelligent worker. Alloying in atomic proportions is theoretically most simple, but our author holds that it is as yet an abstract principle which has not been satisfactorily demonstrated. He is inclined to praise the intelligent craftsman who can bring his experience and observation into play. Babbitt's metal and Alexander Pick's Delta metal, he tells us, in quoting from "Modern Foundry Practice," were the outcome of an intimate knowledge of the needs of advanced engineering practice, combined with the grasp of the properties required to overtake them. Mr. Buchanan rightly condemns the man who fancies he has a monopoly of the correct alloys, or who has "trade secrets," surrounded with much mystery, concerning particular ingredients and occult processes by which they are mixed together, or the talismanic properties of certain proportions.

Brass is fabled to have been first accidentally formed at the burning of Corinth in 146 B. C., but there are reliable specifications for brass to be found as early as 1779, and in 1781 James Emerson took out a patent for making brass. In dealing with ornamental brass work we are reminded of the curious fact that though gold is the universal standard of value there are now 17 metals which are more costly. In this chapter numerous receipts are given and tables of alloys of all kinds abound. The concluding pages are devoted to bell foundry alloys, and a very interesting history and description of the well-known bells of the world are given. In lighter strain our author reproduces Sir Theodore Martin's translation of Schiller's "Song of the Bell."

Under the head of Modern Alloys the difference between brass and bronze is broadly stated, brass being a combination of copper and zinc, while bronze is made from copper and tin. All the varieties of the latter, such as aluminum bronze, manganese bronze, phosphor bronze, Muntz metal and Dick's Delta, are spoken of as high tension alloys, and their composition and properties are duly set forth. Babbitt's, antifriction metals and type metal are given with tables of proportions and uses. The concluding chapter is miscellaneous alloys and tables, in which are contained receipts for alloys of many and various kinds, are given and a description with illustrations of a modern crucible furnace and a revolving ingot mold. The book is practical and readable. It is a handbook containing tables, notes and data for the guidance of manufacturers and craftsmen.

## OBITUARY.

W. RILEY BROWN.

W. Riley Brown, president of the Columbus Iron Works and of the Southern Plow Company of Columbus, Ga., died from pneumonia, on March 28, aged 80 years. He was one of the pioneers of the iron industry in Georgia. Mr. Brown was born at Monticello, Ga., and went to Columbus when 17 years of age. There he spent the rest of his life. He learned the molding trade, and in 1851 became connected with the firm of Wildman & Craig. In 1855 he, with others, organized the Columbus Iron Works, and was made superintendent, which place he filled until 1860, when he was made president of the company. In 1861 the Confederate Government converted the iron works into a naval station, and it was employed for building gun boats, cannon, artillery wagons and gun carriages and also shells and shot for artillery until the close of the war, when the Federal forces took possession of the city and partially destroyed the works. Some of the best war material made in the Confederacy was turned out at these works under Mr. Brown's supervision. After the war the Columbus Iron Works began the manufacture of machinery of various kinds, boilers, engines and foundry work of all kinds, and also added a wood working depart-

ment. It was the first works of the kind in the South to undertake the manufacture of ice machines. The company now send these machines to all parts of the world. They are also large manufacturers of steel plows.

### NOTES.

LEWIS R. KEIZER, of the firm of Murrill & Keizer, machinists, of Baltimore, Md., died on March 30, at Miami, Fla., where he was sojourning for the benefit of his health. Mr. Keizer was 70 years of age.

SEBASTIAN RUNSER, one of the pioneer iron men of the Shenango Valley, and for a long time superintendent of the Greenville Rolling Mill, died at Sharon, Pa., on March 21, after a long illness, aged 74 years. He was born in France, and came to America when a child. His son, Frank Runser, is the manager of the Mahoning Foundry & Machine Company.

JOSEPH FORKER, a pioneer iron manufacturer of Western Pennsylvania, died on March 19, at his home in Sharon, Pa., after a long illness, aged 73 years. He was born in Mercer, and early in life went into the coal business, subsequently becoming connected with the Spearman Iron Company, of which he was a director for 30 years. Mr. Forker organized the Sharon National Bank in 1875 and was the president of that institution. His only son, D. M. Forker, is the superintendent of the Republic Iron & Steel Company's furnace, at Birmingham, Ala.

MARTIN SCHEELER, Sr., a prominent German-American citizen of Buffalo, N. Y., died on March 17, aged 82 years. He was born in Hesse Darmstadt, and came to this country at the age of 33 years. After obtaining employment in a number of different lines of industry, he started a wire working establishment in West Seneca, N. Y., which he subsequently removed to Buffalo. Mr. Scheeler was the sole proprietor of the plant, which he operated until a few years back, when he retired and turned over the management to his two sons.

WILLIAM R. SNEAD, president of the Snead & Co. Iron Works of Jersey City, N. J., was found dead in his bed on March 27 at his home, 17 West Thirty-fifth street, New York City. Mr. Snead had been in indifferent health during the winter. His death was attributed to an attack of apoplexy. He became president of the iron works upon the retirement of his father some years ago. Mr. Snead was a graduate of the Massachusetts Institute of Technology.

CAPT. JOHN LITTLE, for many years night superintendent of the Edgar Thomson mills of the Carnegie Steel Company, died on March 21, at his home in Braddock, Pa., aged 61 years. He served in the Civil War as captain of a company of the Fifty-fourth Pennsylvania Infantry, and, at its close, entered the employ of the Cambria Iron Works, where he remained for eight years. In 1874 he went to the Edgar Thomson mills as head roller, becoming night superintendent ten years later.

THOMAS PENROSE, secretary, treasurer and manager of the Central Plow Steel Company, Limited, of Pittsburgh, died on March 18, aged 60 years. He was born at Salineville, Ohio, and went to Pittsburgh 30 years ago. Mr. Penrose was connected with Howe, Brown & Co. for many years, and acted, for a time, as their Chicago representative.

**A Reference Book on Transmission.**—Reeves Pulley Company, Columbus, Ind., issue a small leather bound gilt edged pocket reference and memorandum book, size 3 x 6 inches, covering much valuable information relating to variable speed transmission, illustrated with sectional and perspective drawings. The subjects covered are the use of variable feed transmitters on different mechanisms, relative working parts of the Reeves transmitter, rules for calculating size and speed of pulleys, &c.; tables of horse-power transmission, tables of speed varying mechanisms, special information for paper mill trade and considerable other information of value to all users of power. The demand for the little book has been so great as to cause the publishers to set the nominal price of 15 cents per copy, for which it will be sent post-paid to any address.

## MANUFACTURING.

### Iron and Steel.

The Harrisburg Rolling Mill Company, Harrisburg, Pa., have announced that the rate for puddling would be advanced 25 cents, making it \$4.25 per ton, on April 16, all puddlers being affected. The rate for heating was advanced 61 cents, to take effect at the same time.

Pilling & Crane, Girard Building, Philadelphia, Pa., have incorporated the Northern Iron Company with a capital stock of \$100,000, to operate Cedar Point furnace, which they recently leased from Witherbee, Sherman & Co., Incorporated, Port Henry, N. Y., and which they are remodeling preparatory to putting in blast early in May. The furnace has an estimated production of about 150 tons per day and will be run on basic, open hearth and mill irons.

Joseph Wharton, pig iron manufacturer, Philadelphia, Pa., has purchased the coke plant of Harry McCreary, at Graceton, Ind., for \$140,000. This includes the row of ovens, 250 acres of surface and coal under 2650 acres. Mr. Wharton will build 126 more ovens at once.

The Taylor Iron & Steel Company, High Bridge, N. J., will build a 200-foot addition to their plant.

The Thomas Iron Company, Easton, Pa., have increased the wages of all employees at their furnaces at Hellertown 10 per cent.

Two additional open hearth steel furnaces are being built at the Vandergrift plant of the American Sheet Steel Company.

Three of the independent sheet mills, these being Laughlin Nail Company, with sheet mills at Martin's Ferry, Ohio; Whitaker Iron Company, Wheeling, West Va., and Maryland Sheet & Steel Company, Cumberland, Md., have bought the open hearth plant, formerly operated by the Burgess Steel & Iron Company, at Portsmouth, Ohio, but which was taken over by the Crucible Steel Company of America. The plant contains nine gas heating furnaces, two annealing furnaces, one pair furnace, six turns of rolls, a 4-ton hammer, four Swindell open hearth steel furnaces of 30 tons capacity each. It is the intention to overhaul the plant and add probably two more furnaces and a bar mill, and roll sheet bars. It will probably be 60 days or longer before the plant is ready for operation.

The Toledo Furnace Company of Toledo, Ohio, who are promoted by Pickands, Mather & Co., Cleveland, are placing contracts for the erection and equipment of the plant. Contracts have been closed with the Variety Iron Works, Cleveland, for the structural iron work; with the Westinghouse Machine Company, Pittsburgh, for power equipment, and with Barnell & Record of Minneapolis, for the ore docks.

The Chillicothe Steel Company, recently organized at Chillicothe, Ohio, for the purpose of experimenting with a new process for making steel under the plans of J. B. Hastings, of Parkersburg, W. Va., have decided to wind up their business, as it is reported the experiments were not up to the required tests.

### General Machinery.

The Forskell Motor Company, Anderson, Ind., manufacturers of speed indicators and special tools, have incorporated with \$25,000 capital for the purpose of enlarging their business. They have recently installed a number of new lathes, drill presses, power presses, &c., most of which were furnished by the Marshall & Huschart Machinery Company, and Hill, Clarke & Co. of Chicago.

New machinery is required by the recently incorporated Whatcom Machinery Depot of Whatcom, Wash. The company have purchased the B. B. Iron Works at Whatcom and the Warren & Smith plant at Fairhaven, both of which will be operated separately. They advise us that they will add some new machinery, none of which has as yet been purchased. The officers are W. M. Frizell, president; Thomas Burns, vice-president; G. W. Smith, secretary, and J. B. Warren, manager.

The Lowell Windmill Mfg. Company, Salina, Kan., recently organized, are in the market for lathes, punches, shears and other equipment for their new plant. They advise us that the engines have been secured. A plant will be erected at once and will be equipped for the manufacture of a patented mill, the invention of G. S. Lowell. Later on they propose to take up the manufacture of pumps, tanks and irrigation supplies. The officers are G. S. Lowell, president; Alfred Lowell, vice-president; M. Lowell, secretary, and A. F. Wolff, treasurer.

The recently organized Garwood Foundry & Machine Company, Garwood, N. J., have completed their foundry building, 80 x 180 feet, and are erecting a machine shop 40 x 80 feet, and boiler and engine house 24 x 40 feet. They expect to have their plant ready for operation by May.

The Hoke Mfg. Company, South Bend, Ind., who are to erect a large plant at Frankfort this summer for the manufacture of corn cultivators, harrows, &c., advise us that in the course of a few months they will be ready to take up the matter of purchasing new machinery.

The New Britain Machine Company, New Britain, Conn., have broken ground for and will complete as soon as possible a new factory, 150 x 56 feet, four stories and basement, of brick. The site adjoins their present plant. Practically all their pres-

ent equipment will be moved and some additional machinery purchased.

A lathe, planer, power punch and shear for band iron, light angle iron and round iron cutting are required by H. L. Chapman of Marcellus, Mich., manufacturer of improved portable forges and gasoline engines. Having outgrown the present plant, Mr. Chapman is looking for a new location with better railroad facilities. It is probable that a new plant with twice the capacity of the present one will be erected.

The increasing use of the grinding of drills with proper tools rather than by hand, and the large field covered by the New Yankee drill grinders, manufactured by the Wilmarth & Morman Company of Grand Rapids, Mich., are indicated by the following list of a portion only of the shops to which shipments were made during the month of February: Wet grinders to Diamond Jo Line Steamers, Dubuque, Iowa; Hazleton Iron Works, Hazleton, Pa.; Lowell Machine Shops, Lowell, Mass.; Mosler Safe Company, Hamilton, Ohio; Riverton Coal Company, Riverton, Ill.; Browning Engineering Company, Cleveland, Ohio; Pennsylvania Railroad Company, Philadelphia, Pa.; Quebec Central Railway Company, Sherbrooke, P. Q.; Newport News Ship Building & Dry Dock Company, Newport News, Va.; National Transit Company, Oil City, Pa.; Webster & Perks Tool Company, Springfield, Ohio, and dry grinders to International Power Company, Worcester, Mass.; Jas. H. Curran Elevator Company, Cincinnati, Ohio; American Soda Fountain Company, Boston, Mass.; M. L. Andrews Company, Cincinnati, Ohio; Sidney Steel Scraper Company, Sidney, Ohio; Consolidated Hame Company, Sunapee, N. H.; Gemmer Engine & Mfg. Company, Marion, Ind.; American Waltham Watch Company, Waltham, Mass.; Brown Corliss Engine Company, Milwaukee, Wis.; Berkshire Cotton Mfg. Company, Adams, Mass.; D. L. Bates & Bro., Dayton, Ohio; Beaufort County Lumber Company, Greenville, N. C.; Kinkade & Liggett Company, Columbus, Ohio; Boston & Lockport Block Company, Boston, Mass.; Bond Steel Post Company, Adrian, Mich.; Gem City Boiler Company, Dayton, Ohio. On February 24 seven orders for New Yankee drill grinders were received.

The Davis, Walker & Cooper Company, engineers, founders and machinists, Youngstown, Ohio, have secured a site in Youngstown, and work on their new building and installation of machinery will be started at the earliest possible date. On the site bought is a building, 100 by 45 feet, and to this will be added other buildings. The concern will build a general line of rolling mill and steel works machinery. James Cooper is general manager of this concern.

The Philadelphia Forge Company, Philadelphia, Pa., have let contract for erection of an addition, 30 x 60 feet, to the machine shop, and are adding new boiler and engine room and enlarging warehouse and shipping facilities. All equipment has been purchased. Coatesville Boiler Company, Coatesville, Pa., will supply boiler, 150 horse-power; Snell & Meberg, New Hamburg, Pa., engine, 50 horse-power, and Pond Machine Tool Company, the lathes.

The Aitna Iron Works, St. Cloud, Minn., who recently purchased the Stevenson foundry and machine shop, have placed the plant in first class condition and are now prepared to do all kinds of foundry and machine work.

The Urschel White Lime Company are erecting at Woodville, Ohio, a large plant for the production of various products obtained from limestone and burnt lime. Large power equipment, elevators, lime machinery, &c., will be installed.

The Reade Machinery Company, Cleveland, Ohio, have sold a 48 x 48 x 16 foot planer to the Davis-Walker Cooper Company of Youngstown, who are to erect a large foundry and machine shop in that city.

The Owens Machine Tool Company of Springfield, Ohio, whose plant was destroyed in the recent disastrous fire in that city a short time ago, are getting out work in temporary quarters and are preparing for the erection of a new plant.

The Lucas Machine Tool Company of Cleveland, Ohio, are preparing plans for the erection at Glenville, near Cleveland, of a modern brick factory for the production of their machine tools. They manufacture multiple drills and special machinery.

The Globe Machine & Stamping Company of Cleveland, Ohio, have incorporated with \$10,000 capital stock. Incorporators: W. F. Maurer, A. L. Maurer, Carl F. Schroeder, Charles Highley and J. C. Lower. They have recently moved into a new factory at 970-972 Hamilton street, and will do general machine shop and metal stamping business.

The Toledo & Ohio Central Railway Company, Toledo, Ohio, are preparing to make improvements to their repair shops at Bucyrus, Ohio. A building, 200 x 80 feet, will be erected for a wood working shop, and the present wood working shop will be used as an addition to the machine shop. Considerable new machinery will be added.

### Boilers and Engines.

It is probable that the town of Petersburg, Ind., will put in an electric lighting plant this summer. Frank C. Thomas, town clerk.

The Gruber Boiler Works, Fort Wayne, Ind., which were recently damaged by fire, are being practically rebuilt on a much larger scale. The building will be 40 x 100 feet, and will be



equipped with improved machinery, all of which has been purchased.

The Fond du Lac Street Railway & Light Company, Fond du Lac, Wis., will increase their plant in order to furnish power for the Fond du Lac-Oshkosh Interurban Electric Railway, to be constructed by the Columbia Construction Company, from Fond du Lac to Oshkosh.

The People's Traction Company, Galesburg, Ill., are building a complete power plant and constructing a road 12 miles long. All equipment has been purchased, and the General Electric Company, New York City, have the contract for electrical machinery: Niles Car Mfg. Company, Niles, Ohio, for cars; Murray Iron Works, Burlington, Iowa, for a 24 x 48 Corliss engine, heavy duty frame, and Frost Mfg. Company, Galesburg, Ill., for tubular boilers.

The Buffalo, Springville & Cattaraugus Railway Company, Buffalo, N. Y., who are constructing an electric road 38 miles long, will build a power house of 2000 horse-power capacity. Address U. L. Upson, vice-president and general manager.

The Reeves Engine Company, Trenton, N. J., recently incorporated with a capital stock of \$400,000, took possession of the plant and appliances of the old company April 1 and will materially increase the capacity of the plant by the erection of new buildings and the installation of additional machinery. An office and salesroom will be established at once in New York City, and it is probable that branch offices will be opened up in other large cities. At a meeting of the stockholders held last week the following officers and directors were chosen: Clifton Reeves, president; William M. Muschert, vice-president; William A. Buckman, secretary; A. C. Reeves, treasurer; Wallace Buckman, Owen Moon, Jr., and Richard H. Reed of New York City. The Executive Committee of the company is made up of A. C. Reeves, Owen Moon, Jr., and R. H. Reed.

The Southern Electric Light & Power Company, Philadelphia, Pa., have filed plans for a new \$300,000 power house to be built at Twenty-sixth and Christian streets. The building will be five stories high and 163 x 166 feet. It is expected that the building will be extended to about five times its present length. Most of the equipment has been secured.

The Cleveland, Elyria & Western Railway Company, Cleveland, Ohio, are preparing to increase the capacity of their electric power plant at Elyria, and have placed a contract with the Westinghouse Machine Company for two 1000 kw. Parsons turbines to be direct connected to generators. They will shortly close contracts for boilers, mechanical stokers, economizers, and condenser plant. It is claimed this will be the first steam turbine outfit used in an electric railway plant in this country.

The Sterling Boiler Company's plant at Barberton, Ohio, last week made shipment of 41 carloads of boilers to sugar plantations in Porto Rico. A short time ago the company shipped 20 carloads of boilers to the same parties, and these are said to have been the largest shipments of boilers even sent to Porto Rico.

The McKibben Gas Engine & Electric Company of Lima, Ohio, have been incorporated with \$10,000 by C. W. McKibben, Lloyd L. Thomas, John Carnes, Irvin Munch and W. S. Walter.

The Springfield, Ohio, fire department have placed contracts for four second size fire steamers. The Le France Fire Steamer Company, Elmira, N. Y., and the American Fire Steamer Company of Cincinnati will each build two.

The Northwest Mfg. Company of Toledo, Ohio, have been incorporated for \$20,000 by George W. Gargen, William H. Howe, Wm. H. Sance, Henry W. Miller and Wm. M. Edison. They will manufacture a new boiler flue cleaner, the invention of W. H. Howe. They will probably erect a new factory.

#### Bridges and Buildings.

The Toledo Terminal & Railway Company of Toledo have placed a contract with the American Bridge Company for the superstructure of a bridge to be erected across the Maumee River. The bridge will cost about \$450,000 and is to be ready for trains by December 1.

#### Foundries.

The Uniform Steel Company, 320 Broadway, New York City, manufacturers of steel castings, have purchased the old Eastern Carbon Company's plant at Rahway, N. J., for \$40,000 and will spend between \$45,000 and \$50,000 in improvements and installing new molding machines, furnaces, &c. As soon as the newly acquired property is ready for occupancy the company will remove from their present location in Newark. The capital stock has recently been increased to \$500,000. The officers are: M. F. Burns, president; S. Milton Schatzkin, vice-president; Geo. J. Rogers, treasurer; A. E. Williamson, secretary, and Walter H. Gray, assistant secretary.

The Reading Radiator Company, Reading, Pa., are building a 60 x 80 foot addition to their foundry. They are in the market for an apparatus for opening the ventilators at top of foundry that can be operated from the floor below.

#### Fires.

The plant of the Wilson Sash & Blind Company, Olean, N. Y., with the exception of a storehouse, was destroyed by fire March 29. The main structure was 75 x 200 feet and contained valuable machinery. The loss is estimated at \$100,000.

Volbrecht & Kirkpatrick's saw works at Elmira, N. Y., were damaged by fire March 27. The loss is about \$3000.

The Somerset Chemical Company suffered a \$25,000 loss by fire at their plant, at Round Brook, N. J., March 29.

The main milling department of the Virginia-Carolina Chemical Company's plant at Memphis, Tenn., was destroyed by fire March 28, entailing a heavy loss.

The pattern shop of the Barber Mfg. Company, Ashtabula, Ohio, was destroyed by fire a few days ago, entailing a loss of about \$10,000 worth of furnace patterns. Molders of the company went on strike a short time ago and since then nonunion men have been employed. It is believed the fire was of incendiary origin.

The five-story factory building at Lincoln street and Austin avenue, Chicago, Ill., occupied by the Voss Mfg. Company, National Mirror Company and the Armstrong Brothers Tool Company, was destroyed by fire April 1. The loss is estimated at \$150,000.

#### Hardware.

Work has been begun on improvements to cost \$5000 on the saw handle factory of Henry Disston & Sons, Tacony, Philadelphia, Pa. The work includes the addition of a third story, 43 x 81 feet, the remodeling of the first and second stories and a tower fire escape.

Morse Brothers, Canton, Mass., manufacturers of the Rising Sun stove polish and Sun paste stove polish, advise us that they have largely increased their facilities for making the latter this season, and are now prepared to fill all orders promptly, which they were not able to do during the winter, owing to the excessive demand and inadequate output.

Peerless Mfg. Company, Louisville, Ky., a few weeks since took possession of their fine new plant, which is referred to as one of the largest, most modern and best equipped in the country devoted exclusively to the manufacture of iron and brass fire place goods. Over 3 acres are under roof, thus assuring a capacity sufficient to supply the wants of the trade in the busiest season. The buildings are of brick, with roof of sawtooth construction, and every department is abundantly lighted. The entire plant is heated and ventilated by an elaborate exhaust system. Electricity is used for power, each department being operated independently. This obviates closing the entire plant in case of accident in one part, and enables the company when necessary to operate a single department extra time. Special attention has been given to the welfare of employees, who are provided with many conveniences, which are appreciated and which tend to create a personal attachment between them and their employers, thus enabling the company to retain the best of experienced help and to command their best service.

Judd & Leland, manufacturers of bicycle pumps and sundries, a full line of plated tinware, sprayers, cake tins and leather cup valves of all kinds, as well as leather, rubber, asbestos and special packings, have incorporated their business under the style of Judd & Leland Mfg. Company.

J. J. Ryan & Co., 68-74 West Monroe street, Chicago, brass founders and finishers and manufacturers of plumbers' brass goods, report receiving contracts for metal trimmings for marble closets and urinal partitions and lavatory work for the following buildings: Auditorium Annex, Hoyt Building and Rookery Building, Chicago; Grand Opera House, Cincinnati; Peoria Hotel and Rock Island Depot, Peoria, Ill.

Remington Arms Company, Ilion, N. Y., who are the makers of the Remington-Lee magazine rifles, which were selected and used by the Americans at Sea Girt last season in their competition with the Irish team, are working on a special military rifle of the Remington-Lee principle, which will be constructed to combine with great accuracy the necessary qualifications to permit its use in the military matches of the National Rifle Association.

#### Miscellaneous.

The Jarecki Mfg. Company, Erie, Pa., are constantly shipping steam brass work and malleable iron fittings to London, England, and the Continent.

Contracts for the building and equipment of the new plant of the Wheeling Glass Letter & Novelty Company, at Wheeling, W. Va., have been awarded. The factory building will be 40 x 40 feet; selecting room, 40 x 30 feet; mixing room, 40 x 40 feet; lehr room, 40 x 60 feet; packing room, 40 x 50 feet; warehouse, 40 x 70 feet; finishing and decorating room, 40 x 80 feet. The Bessemer Gas Engine Company, Grove City, Pa., will furnish the power equipment. The product will be patented glass letters for show windows and signs in all styles of decoration, principally among them gold and silver. Gold and other colored tiling to be used for interior and exterior building will also be a large product of this new plant. The officers of this concern are George E. House, president; J. K. Hall, vice-president; Otto Jaeger, secretary and treasurer, and E. J. Lutwyche, superintendent.

The Forsythe Pattern Company, Youngstown, Ohio, have been granted a charter with a capital of \$100,000.

The General Fireproofing Company, recently organized at Youngstown, Ohio, will locate their plant on Crab Creek, in Youngstown. This concern are successors to the International

Metal Lath Company, and will manufacture Herringbone expanded steel products. The officers of this concern are Myron I. Arms, president; A. P. White, vice-president; George D. Wick, vice-president; W. H. Foster, secretary, and W. A. Kingsley, treasurer and general manager.

The St. Louis Clay Burning Company, St. Louis, Mo., have purchased about 30 acres of ground near Bond Station, on the St. Louis, Kansas City & Colorado Railroad, where they will erect a brick making plant at a cost of about \$125,000. The entire equipment of machinery has been purchased through Chambers Brothers' Company of Philadelphia. Young H. Bond is president.

The Northwest Steamship Company, Toronto, Ont., are refitting their passenger boats, "Northwest" and "Northland," at a cost of about \$500,000. Included in the changes will be the installation of new boilers of the Scotch marine type. On each boat there will be duplicate generating sets for electric lighting, consisting of two horizontal tandem compound engines, made by the Buffalo Forge Company of Buffalo, N. Y., direct connected with General Electric marine type 75 k.w. generators. The engines are of the Buffalo Forge Company's latest type, and are especially designed for this contract, the space available being limited. As the boats are to be put into commission at the near approach of lake navigation, the builders have agreed to deliver the engines in an extremely short time. The boats are also being fitted out with a complete set of the most improved ventilating apparatus for maintaining the air in all portions of the vessel uniformly cool and pure at all times. Six Buffalo steel plate fans with direct connected General Electric motors will be installed in each steamer with an elaborate network of galvanized iron ducts for delivering the air.

The United Injector Company, 85 Liberty street, New York City, have been incorporated with a paid in capital of \$500,000 for the purpose of manufacturing injectors, ejectors, jet apparatus and steam specialties of all kinds. The officers are: Charles A. Moore, president; J. N. Derby, vice-president, and S. B. Aller, treasurer.

The Schwab Safe Mfg. Company of Fostoria, Ohio, have reorganized owing to the retirement of L. Schwab, the organizer of the business. The new officers are: E. W. Erwin, president and general manager; F. R. Elbert, vice-president, and L. T. Jones, secretary-treasurer. The company propose to increase their output to 75 safes per day in the near future.

The La Crosse Plow Company, La Crosse, Wis., have plans ready for the erection of another five-story building, 60 x 150 feet, and for a large addition to the foundry. They also intend to enlarge their main factory building and to put in a larger steam plant. No new equipment will be required, as everything excepting an elevator and a few wood working machines have been contracted for.

### Central Pennsylvania News.

HARRISBURG, PA., April 2, 1902.—The spring begins with prospects bright in all of the industrial plants about the lower Susquehanna Valley and in towns throughout the central part of the State. Almost every company report orders sufficient to run for months, and some of the great concerns are working men night and day in order to get their additions into running order. Railroad shipments have been large and it is the cry in many sections that all of them cannot be made because of the scarcity of cars. The fuel shortage has been overcome to a certain extent and the supply of material is being increased, so that there is only one drawback, and that is the fear of a strike in the coal regions, which is causing many firms to buy their coal at once and to insist on immediate deliveries.

There have been comparatively few strikes among the iron workers. The men realize that this is an era of prosperity for all and that their interests are the same as those of the managements. Numerous demands have been made for increased wages and in most cases they have been granted with some reservations. In the eastern part of the State the rate for puddlers has gone up, the men asking \$4.50 per ton, the highest paid in many years and indicating the prosperity which can stand such increases. It is said in the Schuylkill Valley that this increase may be granted. In the Susquehanna Valley it has been asked, but not granted yet. The Harrisburg mills have offered \$4.25 per ton, to become effective on April 16. Men are wanted in every iron and steel town in this part of the State, and at Steelton the Pennsylvania Steel Company are daily adding to their force of employees. There will be still more work before many months, as the company's bridge shops, the greatest in

this part of the country, will be ready for operations. Labor rates hold good.

The McCormick Estate have sold their old Swatara Furnace at Union Deposit, Dauphin County, and the stack will be dismantled. The furnace was built in 1857 and enjoyed a period of prosperity until 1887, when it was blown out and has since been idle. The stack was rated at 9000 tons per year and the last firm to lease it were Denny & Watts.

The lease of the Eleanor Iron Company of Tyrone on the plant at Hollidaysburg expires this week, and it was stated to-day that it would not be renewed and that the plant will be idle, for lease or sale. The works have been operated for some time by a company of which R. C. Neal of this city was president, and H. L. Sholly treasurer. The mill was known as the Juniata rolling mill and operated 13 puddle furnaces, 10 and 20 inch rolls, making bar, skelp and puddled iron. The works was formerly the plant of the Hollidaysburg & Gap Iron Company, and the nail mill was long ago abandoned.

The Susquehanna Iron & Steel Company will start Vesta Furnace, near Marietta, soon. All of the company's mills at Columbia and York are busy. The situation in Lancaster and York counties is good and promising. The Penn Iron Works at Lancaster were closed for a short period for repairs and will be started this week. A number of wage changes are being talked of in these sections. The York molders, who had been out nearly a year over a dispute for wages, have formally returned to work.

An interesting story is going the rounds that the Pennsylvania Railroad will establish a great car wheel foundry in Blair County. So far little is known, although the railroad company have taken large plots of land at Hollidaysburg.

The Valentine Iron Company's plant at Bellefonte is to be sold at public sale on April 17. The Commonwealth Trust Company of this city have had charge of the property for some time. It includes a furnace, rolling mill and lands and some valuable ore properties.

A new foundry will be built at Avondale by John McGaughan.

The Johnston Railroad Frog & Switch Works at Chester are being enlarged so that their capacity will be doubled. The company are doing a great business, including many foreign orders.

J. K. Petty & Co., operating the Lebanon Boiler Works, are making some additions in order to cope with orders. An erecting shop, 120 x 50 feet, is planned and a new blacksmith shop made.

The Lebanon Chain Works have made some very satisfactory tests of chains lately, their 600,000-pound testing machine, made by the Philadelphia Machine Tool Company, having been verified and accepted by an *attaché* of British Lloyds. There are some large orders being filled.

**The Pressed Steel Car Company.**—The 60,000 mark has been passed by the Pressed Steel Car Company of Pittsburgh, Pa., in the manufacture of pressed steel cars. The company's output up to March 27, 1902, aggregated over 60,000 finished cars, or sufficient to make a solid train of cars 360 miles long. The cars built by this company have practically revolutionized the present methods for freight car transportation, the pressed steel car being much lighter in proportion to the carrying capacity than the old style wooden cars in use prior to 1897. The works of the company are pushed to their fullest extent, delivering over 100 finished cars per day, in addition to a large number of trucks, bolsters, center plates and other pressed steel specialties for wooden and steel cars.

M. M. Garland, formerly president of the Amalgamated Association of Iron, Steel and Tin Workers, has been reappointed Surveyor of the port of Pittsburgh.

The American Tin Plate Company are building an experiment sheet rolling plant at the Monongahela works.



## The Iron and Metal Trades.

The struggle to hold values down continues unabated, with indications that the market is not fully under control of the conservative element. Negotiations have continued between the United States Steel Corporation and the Bessemer Association, the furnacemen holding out for better terms for the requirements of the fourth quarter, on the ground that sales are being made at very much better figures, and that other grades of Iron are selling at a much better price relatively. The impression prevails that \$17 at Valley furnace, or \$17.75, Pittsburgh, may be the basis of the new contracts. To the leading interest the matter seems to be a question chiefly of the effect of higher prices on sentiment, since the existence of many sliding scales based upon the price of Bessemer Pig Iron would largely compensate for any actual advance paid.

In the Foundry Iron trade the leading Southern producers still hold to the official quotation of \$12 for No. 2, at Birmingham, which applies to the markets of the Central West. Still, other Southern interests and the Northern furnaces are selling some Iron at higher prices.

Pittsburgh reports the sale of 25,000 tons of Bessemer Pig for Malleable Iron purposes.

On the Atlantic seaboard markets the scarcity of Pig Iron is emphasized by the fact that a very considerable part of the tonnage usually available as Foundry Iron has been diverted earlier in the year into Basic Pig, chiefly for the Pittsburgh market.

The danger of labor troubles is clouding the horizon. The strike of the miners of the Rochester & Pittsburgh Company may soon cause the stoppage of furnaces in Western Pennsylvania dependent largely on the company for Coke, and if prolonged it would seriously affect some of the furnaces of the Buffalo district. On the other hand, it will also trouble some of the founders.

The demand on the part of furnace labor in the Central West for an eight-hour day, to take effect on May 1, may unsettle matters. With the enormous current consumption any check in production, be it only trifling, would kill a good deal of business.

A moderate amount of business continues to be done in foreign Steel, which can be laid down on the seaboard at about \$31 for Billets. But there is little Steel available at such a price for prompt delivery in Germany, whence most of it comes, while neither buyers nor importers are willing to take the risks involved in contracting for delivery in July or later. As we understand it the Steel is valued for duty at the market rate at time of shipment. It will take only a moderate advance abroad to increase the duty on Billets from \$6.72 to \$8.96 per gross ton. Orders placed at present on the basis of the lower rate might, on the distant date of shipment, turn out to be subject to the latter rate.

In the Finished Iron trade the reports are all favorable as to tonnage. In fact, in some important branches the flow of orders booked is greater than the current deliveries, so that it is becoming more and more hopeless to catch up.

A better feeling is prevailing in the Copper trade. One point, however, is being overlooked, and that is that the Greene Company, in Mexico, are rushing into line as a great new producer. They are now sending to market over 3,500,000 pounds fine per month, and are soon expected to reach close to 5,000,000 pounds.

## A Comparison of Prices.

At date, one week, one month and one year previous.

### Advances Over the Previous Month in Heavy Type, Declines in Italics.

	April 2, 1902.	Mar. 26, 1902.	Mar. 5, 1902.	April 3, 1901.
<b>FIG IRON:</b>				
Foundry Pig No. 2, Standard Philadelphia .....	\$18.75	18.75	18.25	15.50
Foundry Pig No. 2, Southern Cincinnati .....	15.00	15.00	15.00	14.50
Foundry Pig No. 2, Local Chicago .....	18.50	18.50	....	15.50
Bessemer Pig, Pittsburgh .....	17.75	17.50	17.25	16.75
Gray Forge, Pittsburgh .....	18.25	18.00	16.75	14.50
Lake Superior Charcoal, Chicago .....	21.50	21.00	....	18.00
<b>BILLETS, RAILS, ETC.:</b>				
Steel Billets, Pittsburgh .....	31.00	31.00	31.00	24.00
Steel Billets, Philadelphia .....	32.50	33.00	32.50	26.00
Steel Billets, Chicago .....	....	....	....	25.00
Wire Rods, Pittsburgh .....	36.00	36.00	35.75	36.00
Steel Rails, Heavy, Eastern Mill .....	28.00	28.00	28.00	26.00
Spikes, Tidewater .....	2.00	2.00	2.00	1.60
Splice Bars, Tidewater .....	1.60	1.60	1.60	1.40
<b>OLD MATERIAL:</b>				
O. Steel Rails, Chicago .....	17.50	17.50	....	14.00
O. Steel Rails, Philadelphia .....	....	....	19.25	17.00
O. Iron Rails, Chicago .....	24.00	24.00	....	20.00
O. Iron Rails, Philadelphia .....	25.00	24.00	22.00	19.50
O. Car Wheels, Chicago .....	19.00	19.00	....	16.50
O. Car Wheels, Philadelphia .....	17.50	17.50	17.25	16.50
Heavy Steel Scrap, Chicago .....	16.50	16.50	....	14.00
<b>FINISHED IRON AND STEEL:</b>				
Refined Iron Bars, Philadelphia .....	1.92	1.92	1.82	1.40
Common Iron Bars, Chicago .....	1.85	1.85	....	1.60
Common Iron Bars, Pittsburgh .....	....	1.80	1.70	1.45
Steel Bars, Tidewater .....	1.80	1.75	1.75	1.60
Steel Bars, Pittsburgh .....	1.60	1.60	1.60	1.50
Tank Plates, Tidewater .....	1.78	1.78	1.78	1.70
Tank Plates, Pittsburgh .....	1.60	1.60	1.60	1.50
Beams, Tidewater .....	1.85	1.85	1.85	1.75
Beams, Pittsburgh .....	1.70	1.70	1.70	1.60
Angles, Tidewater .....	1.75	1.75	1.75	1.75
Angles, Pittsburgh .....	1.60	1.60	1.60	1.60
Skelp, Grooved Iron .....	1.95	1.95	1.80	1.75
Skelp, Sheared Iron, Pittsburgh .....	2.00	2.00	1.85	1.75
Sheets, No. 27, Pittsburgh .....	3.00	3.00	3.00	3.25
Barb Wire, f.o.b. Pittsburgh .....	2.90	2.90	2.90	2.90
Wire Nails, f.o.b. Pittsburgh .....	2.05	2.05	2.05	2.30
Cut Nails, Mill .....	1.95	1.95	1.95	2.00
<b>METALS:</b>				
Copper, New York .....	12.00	12.00	12.12½	17.00
Spelter, St. Louis .....	4.20	4.12½	4.10	3.75
Lead, New York .....	4.10	4.10	4.10	4.37½
Lead, St. Louis .....	4.02½	4.00	4.05	4.22½
Tin, New York .....	26.40	26.00	25.50	25.50
Antimony, Hallett, New York .....	8.00	8.00	8.00	8.75
Nickel, New York .....	50.00	50.00	50.00	55.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York .....	4.19	4.19	4.19	4.19

## Chicago.

FISHER BUILDING, April 2, 1902.—(By Telegraph.)

The heavy business coming from implement manufacturers and other large consumers of Bars practically ended with the last day of March. It is expected that for some time the business in Bars will be comparatively light. The orders from this class of trade were on the average somewhat larger than those placed last year, thus indicating that the manufacturers of implements, wagons and related lines are looking forward to an increase of business the coming season. If, however, the crop conditions prove satisfactory, it will probably be found that they have again underestimated their requirements and will be obliged to purchase additional quantities. The demand in other branches of the Iron and Steel trades has not been heavy, but it is nevertheless in excess of the available supply, and consequently premiums are usually being paid by those who are compelled to cover their necessities. The whole situation is exceedingly strong, as the contracts now in hand by all producers of Iron and Steel are so heavy as almost to insure a continuance of manufacturing operations on a tremendous scale, not only through the remainder of this year, but some distance into the coming year.

**Pig Iron.**—The furnace companies in a position to do business for the remainder of this year have booked

more good orders. Much of this business came from Malleable foundries, but quite a tonnage was also placed by the general foundry trade. Contracts have been made for deliveries running into the first quarter of next year. The prices realized on these contracts are close to our maximum quotations. The demand for spot Pig Iron is unabated, and anything available in this way is taken with avidity. Virginia No. 1 Foundry has thus sold up to \$20.75, and Southern, No. 1, up to \$20. The Minerva Furnace, at Milwaukee, was blown in last week and will hereafter contribute its share to the local supply, but the product is in such demand that it will be quickly absorbed. We quote as follows:

Lake Superior Charcoal.....	\$21.50 to \$22.25
Local Coke Foundry, No. 1.....	19.00 to 19.50
Local Coke Foundry, No. 2.....	18.50 to 19.00
Local Coke Foundry, No. 3.....	18.00 to 18.50
Local Scotch, No. 1.....	19.00 to 19.50
Ohio Strong Softeners, No. 1.....	20.10 to 20.35
Southern Silvery, according to Silicon.....	16.90 to 19.15
Southern Coke, No. 1.....	16.40 to 18.65
Southern Coke, No. 2.....	15.65 to 17.15
Southern Coke, No. 3.....	15.15 to 16.65
Southern Coke, No. 1 Soft.....	16.40 to 18.15
Southern Coke, No. 2 Soft.....	15.65 to 18.15
Foundry Forge.....	14.65 to 17.15
Southern Gray Forge.....	14.65 to 17.15
Southern Mottled.....	14.65 to 17.15
Southern Charcoal Softeners, according to Silicon.....	18.65 to 19.15
Tennessee Silicon Pig.....	18.65 to 19.15
Alabama and Georgia Car Wheel.....	22.65 to 23.15
Malleable Bessemer.....	19.00 to 19.50
Standard Bessemer.....	..... to 20.00
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	20.10 to 20.60

**Bars.**—The week has seen additional heavy tonnages placed by implement manufacturers, wagon makers, jobbers and other large buyers, all anxious to secure the low price on Soft Steel. The heavy trade have now covered their wants far into next year, and it is naturally expected that for some time the demand will be comparatively quiet. The smaller consumers are, however, free buyers to cover current wants and are paying good prices to secure the delivery of Bar Iron or Steel in 60 to 90 days, while mill shipments of Common Iron are still quoted at 1.85c., Chicago. This price is only given on the most desirable business. The market is generally 1.90c.; Soft Steel Bars are held at 1.75c. to 1.90c.; Hoops, 2.10c. to 2.20c., base, and Angles, 2.25c. to 2.40c., base. Jobbers report a continuance of the heavy demand for shipment from stock, and in notable instances have made sales to buyers in Ohio and Pennsylvania. The demand on jobbers' stocks shows that mills are not making satisfactory shipments to general consumers. Small lots are quoted at 2c. to 2.10c. for Bars, and 2.45c. to 2.50c., base, for Hoops.

**Structural Material.**—The demand for Shapes is large enough to amount to a heavy business if mills could take the contracts offered them. One manufacturer refused an order for 5000 tons of Angles at a price considerable above the agreed quotation. More projects which were contemplated are postponed until the supply becomes more plentiful. Mill shipments are quoted as follows: Beams, Channels and Zees, 15 inches and under, 1.75c. to 1.90c.; 18 inches and over, 1.85c. to 2c.; Angles, 1.75c. to 1.90c. rates; Tees, 1.80c. to 1.90c.; Universal Plates, 1.75c. to 1.85c. Small lots of Beams and Channels from local yards are quoted at 2.50c. to 3.50c.; Angles, 2.50c. to 3.50c. rates; Tees, 2.55c. to 3.50c. rates.

**Plates.**—Business is so large that the local mills are kept 60 days behind on deliveries, and some of the Eastern mills are now asking \$2 per ton above the agreed price. Jobbers find they can easily dispose of tonnage under contract to other buyers at a stiff advance on the mill quotations, the demand from store is excellent, and shipments are being made over an unusually wide area. Mill shipments are quoted as follows: Tank Plate, ¼-inch and heavier, 1.75c. to 1.80c., Chicago; Flange, 1.85c. to 1.95c.; Marine, 1.95c. to 2.05c. Jobbers are selling small lots from store at 2c. to 2.10c. for Tank and 2.25c. for Flange, with the usual extras for heads, segments, lighter gauges, &c.

**Sheets.**—The demand for both Black and Galvanized Sheets seems to be increasing. Some of the independent mills are promising shipments of Black Sheets in 30 days, but they are rapidly filling their order books. The

mills making Galvanized Sheets are not able to offer as early shipment. The supply of Heavy Sheets is still much below the requirements of the market. Mill shipments of No. 27 Black Sheets are quoted at 3.10c. to 3.20c., and Galvanized at 70, 10 and 5. Jobbers quote small lots at 3.35c. to 3.45c. for No. 27 Black, and 70 and 5 for Galvanized.

**Cast Pipe.**—While the volume of business has kept up in consequence of the receipt of numerous small orders, some apprehension exists that advancing prices may check the demand, and quotations are pushed up much further. Manufacturers quote as follows on Water Pipe: Four-inch, \$35; 6-inch, \$29.50; 8-inch and larger, \$28.50.

**Merchant Pipe.**—The trade having bought quite freely a comparatively quiet period is now expected. Rumors have been circulated of another advance, but it does not materialize. Carload lots are quoted as follows, random lengths: Black, ¼ to ½ inch, 56½ off; ¾ to 12 inches, 63½ off; Galvanized, ¼ to ½ inch, 43½ off; ¾ to 12 inches, 50½ off.

**Boiler Tubes.**—The demand is active, and prices are very firm. Quotations are as follows:

	Steel.	Iron.
2½ to 5 inches.....	57½	47½
1½ to 2½ inches.....	50	40
1 to 1½ inches.....	35	30
6 inches and larger.....	52½	45

**Merchant Steel.**—Numerous contracts have been secured from the Implement trade, who have been covering their season requirements for all kinds of specialties. The mills are now crowded with work, covering their capacity far into the future. Mill shipments are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.95c. to 2.10c.; Open Hearth Spring Steel, 2.45c. to 2.55c.; Toe Calk, 2.25c. to 2.40c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 50 off in carload lots. Ordinary grades of Crucible Tool Steel are quoted 7c. for mill shipments; specials, 12c. upward.

**Rails and Track Supplies.**—While some inquiry is being received for Standard Sections of Steel Rails no actual transactions have developed. The local mills are sold up to July on Light Sections. The regular quotation on Heavy Sections continues at \$28, Chicago, and Light Sections at \$32 to \$37. Fastenings are quoted as follows, in carload lots: Splice Bars or Angle Bars, 2c.; Spikes, 2.30c. to 2.40c.; Track Bolts, with Hexagon Nuts, 3.10c. to 3.20c.; Square Nuts, 2.95c. to 3.05c.

**Billets.**—Sales of small lots of Open Hearth Forging Billets have been made at \$37.50 to \$38.50 for July delivery.

**Old Material.**—The supply of most classes of Old Material is getting somewhat larger. The demand is good, but it is expected that the supply will now run in excess of it, and therefore prices are believed to have reached a point above which a further advance is not anticipated. Some dealers have purchased Railroad Wrought at higher prices than those given in our quotations, but it is claimed that the necessity for such action has now passed. The following are approximate quotations per gross ton:

Old Iron Rails.....	\$24.00 to \$25.00
Old Steel Rails, mixed lengths.....	17.50 to 18.00
Old Steel Rails, long lengths.....	24.00 to 24.50
Heavy Relaying Rails.....	29.00 to 30.00
Old Car Wheels.....	19.00 to 20.00
Heavy Melting Steel Scrap.....	16.50 to 17.00
Mixed Steel.....	13.50 to 14.00

The following quotations are per net ton:

Iron Fish Plates.....	\$21.00 to \$21.50
Iron Car Axles.....	24.00 to 24.50
Steel Car Axles.....	21.50 to 22.00
No. 1 Railroad Wrought.....	19.00 to 19.50
No. 2 Railroad Wrought.....	17.25 to 17.75
Shafting.....	18.50 to 19.00
No. 1 Dealers' Forge.....	15.00 to 15.50
No. 1 Bushing and Wrought Pipe.....	13.50 to 14.00
Iron Axle Turnings.....	13.00 to 13.50
Soft Steel Axle Turnings.....	12.50 to 13.00
Machine Shop Turnings.....	12.50 to 13.00
Cast Borings.....	8.00 to 8.50
Mixed Borings, &c.....	8.00 to 8.50
No. 1 BOLLERS, cut.....	13.00 to 13.50
Heavy Cast Scrap.....	14.00 to 14.50
Stove Plate and Light Cast Scrap.....	11.00 to 11.50
Railroad Malleable.....	15.00 to 15.50
Agricultural Malleable.....	13.00 to 13.50

**Metals.**—Copper buyers now seem to have covered themselves pretty generally, and the market is quiet.



Prices are strong, however, as shipments from the West have been checked by the storms and floods. Carload lots of Lake are quoted at 13c., and Casting brands at 12¾c. Pig Lead is in good demand at 4.05c. for Desilverized, and 4.15c. for Corroding in 50-ton lots. Other metals are being bought freely by consumers, but prices are a little easier, as consumers are now receiving Ingot Copper bought some time since at low prices. Selling prices on small lots are as follows: Heavy Cut Copper, 11½c.; Red Brass, 11¼c.; Copper Bottoms, 10¾c.; Pipe Lead, 3.90c.; Zinc, 3.20c.

**Coke.**—Connellsville Coke is still scarce, but West Virginia Coke is being received in good quantities, and the trade is therefore fairly supplied. Spot Coke sells at \$5.50 to \$5.75, while contracts are held at \$5.25 for Standard Connellsville 72-hour Foundry Coke.

## Philadelphia.

FORREST BUILDING, April 1, 1902.

The past week has been considerably broken by two or three days which were more or less of a holiday character. No important changes can be noted in the Iron and Steel markets, however, although the scarcity of material and the firmness in prices are still conspicuous features. There is a variety of opinions in regard to the course of the market in the near future, some being inclined to believe that easier conditions are not far distant, while others see no prospect of such a contingency for a long time to come. There is no reliable data at the present time, however, and until the season is further advanced one side is just as likely to be correct as the other. There is no manner of doubt in regard to the difficulty in getting material for moderately quick delivery, and it is hard to see how matters can be adjusted for a considerable time to come, and, as a matter of fact, it is not expected much before midsummer even under the most favorable circumstances. The difference in quotations for Pig Iron between the second and third quarters of the year is proof of that statement, and is still more distinctly shown for deliveries during the last quarter of the year. The reasonable expectation is that there will be plenty of business, but the question of prices is not regarded with absolute confidence. It may seem like repeating an oft told tale to say that everything depends on the crops, but it is true nevertheless. The certainty of good crops would remove all misgivings in regard to the fall trade, while a failure, or a partial failure, would certainly "give us pause." Come what may during the last half of the year, it is about as sure as anything can be that the second quarter will see higher prices than any we have had since the great advance two years ago. Production during the third and fourth quarters will certainly be the heaviest on record, and the effect upon prices will most likely depend to a great extent upon the quality and quantity of food stuffs that will be raised, the continuance of business activity being largely contingent on that. It is difficult to say whether prices are higher to-day than they were last week or not. So much depends on the circumstances in each individual transaction that absolutely close quotations are impossible. There is a good deal of material coming in from abroad and the country is flooded with c.i.f. orders, but the figures are much too high to be seriously considered under present circumstances. Arrivals of Pig Iron, Steel Billets, Crop Ends, &c., will be extremely helpful in tiding over a temporary period of scarcity, but there is no disposition to duplicate orders at a cost of from \$2 to \$3 or \$4 per ton more than the original purchases. It may be premature to say so, but it begins to look as though plenty of material can be made available by paying enough to get it, and when that point is reached it is astonishing how soon buyers begin to think they do not want it so very bad anyhow. The general market is strong, however, and it is not unlikely that somewhat higher prices may rule before the end of the month is reached.

**Pig Iron.**—The week has brought with it no developments of a special character. The situation is so com-

plicated that about all that can be done is to report sales, leaving others to judge for themselves as to the ultimate outcome. Sales, of course, are at all sorts of prices and are under all sorts of conditions, so that for the time being uniformity is out of the question. Spot No. 2 X Foundry is usually held at \$20, but regular buyers sometimes get it for 50c. less, and if deliveries are spread over the entire quarter preceding midsummer they may do \$1 better, but, like kissing, it goes by favor. For deliveries covering July to December there is a still wider divergence of views. Some quote \$18.50 to \$19, and when exact dates are named and guaranteed these figures are about as well as can be done. There are cases, however, in which very much lower figures are quoted, but are so indefinite that consumers hardly know whether they have Iron coming to them or not. This is simply a statement of fact and is not intended to reflect on the good faith of either buyer or seller. There is an impression that supplies may be considerably larger during the last half of the year, but the amount of work in sight is so enormous that it is about as dangerous to be too pessimistic as it is to be optimistic. The result will probably be that new contracts will not be important pending developments in regard to crops and the general trade outlook. For the present, however, the range of prices would be about as follows:

	Deliveries to July.	July to December.
No. 1 X Foundry.....	\$20.00 to \$21.00	\$19.00 to \$20.00
No. 2 X Foundry.....	19.25 to 20.00	17.50 to 18.00
No. 2 Plain.....	18.75 to 19.00	17.00 to 17.50
Standard Gray Forge.....	18.00 to 18.25	17.25 to 17.50
Ordinary Gray Forge.....	17.25 to 17.75	16.50 to 17.00
Basic (Chilled).....	19.00 to 19.50	18.00 to 18.25

**Billets.**—No sales of Steel have been made public for some time past. There is no domestic Steel offering; foreign could be had at \$32.50 to \$33.50, but there is so much uncertainty in regard to deliveries that nothing can be done at present. Some fairly large lots are arriving which will give temporary relief, but the later months are not very promising to those who may have to buy Steel in the open market.

**Plates.**—The demand is very heavy, and during the week one of the local mills declined to quote on lots aggregating fully 5000 tons, on the ground that it would be impossible to handle the business within any reasonable time. The output is larger than it has been ever before, but the mills have all they can do to accommodate their regular trade, and are therefore not taking outside business. Prices are very strong, but are nominally as follows for Philadelphia and nearby deliveries: Universals, 1.85c. to 1.90c.; Sheared, 1.85c. to 1.90c.; Flange, 1.95c. to 2c.; Fire Box, 2c. to 2.10c.; Marine, 2.05c. to 2.10c.

**Structural Material.**—It is useless to comment on this department of the Steel trade, as the position is in all respects the same as it has been for months past. Prices are nominally unchanged, but everything is sold ahead, and the only chance for getting anything is to pay premiums ranging from \$5 to \$10 per ton, nominal prices being as follows: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

**Bars.**—The same conditions prevail as in almost all other branches. The demand is very large, deliveries being behind and prices strong. The advance in raw material leaves no alternative but to make similar advances in the finished product, and while nominal prices are 1.92c. for carload lots as a minimum, a good deal of business is being done at a higher figure, and 2c. is regarded as one of the probabilities in the near future. General quotations are about as follows: 1.92c. to 1.95c. for Iron Bars, and 1.80c. to 1.85c. for Steel Bars.

**Sheets.**—There is a good demand, particularly for summer deliveries, but the current demand is not beyond what can be comfortably supplied. Prospects are extremely favorable, however, for a very large business during the summer and fall months, and manufacturers are doing the best they can to prepare for it. For the present prices for carload lots and upward of ordinary Sheets would be about as follows (and a tenth more for best qualities), viz., No. 10, 2.30c. to 2.4c.; No. 14, 2.60c.;

Nos. 16 and 17, 3c.; Nos. 18-21, 3.10c.; Nos. 26, 27, 3.30c. to 3.40c.; No. 28, 3.50c.

**Old Material.**—The market is very irregular. Some claim that Steel is easier, but it is difficult to get any kind of material in large quantities. Bids and offers are about as follows for deliveries in buyers' yards: Low Phosphorus Scrap, \$25 to \$26; Choice Railroad Scrap, \$24 to \$25; Light, Ordinary, \$14 to \$15; Light, Forge, \$16 to \$17.50; Machinery Cast, \$16.50 to \$17.50; Heavy Melting Steel, \$21 to \$22; Iron Rails, old, \$25 to \$26; Wrought Turnings, \$15.50 to \$16.50; Choice Heavy, \$17; Cast Borings, \$9.75 to \$10.25; Old Car Wheels, \$17.50 to \$18; Iron Axles, \$26 to \$27; Steel, \$22 to \$23.

E. H. Wilson & Co. have removed their offices to the Arcade Building, southeast corner Fifteenth and Market streets, rooms 410 and 411.

Mifflin, Wheeler & Co. have removed to room 412 the Arcade Building, which is rapidly becoming the center for the Philadelphia Iron and Steel trade.

## Cleveland.

CLEVELAND, OHIO, April 1, 1902.

**Iron Ore.**—During the week that has just closed so-called independent shippers have taken tonnage for the transportation of about 800,000 tons of Ore during the season based on a rate of 75c. between Duluth and Ohio ports. Previously the United States Steel Corporation had covered 1,200,000 tons of Ore at the same rate. The fleet of the Pittsburgh Steamship Company, carrying 10,000,000 tons during a given season, are also engaged in the trade, the basis of rates being 75c. between Duluth and Ohio. This makes in all therefore 12,000,000 tons covered at the lower rate, as against 4,000,000 tons covered at the 80c. rate, which was paid by some of the smaller shippers. The total shipment for the year will probably be about 22,000,000 tons, 20 per cent. of which the shippers usually hold open to be brought down by wild boats. Upon this basis there is about 1,500,000 tons only that is yet to be covered by contract for season delivery. The Cleveland owners, who are the principal factors in the lake freight situation, are united in their stand to accept nothing less than 80c. a ton, and have taken none of the lower rate material. It is a question whether the movement of the remaining 1,500,000 tons can be arranged for exclusive of the Cleveland fleet, and the real controversy of the spring will come in covering up the Ore that remains subject to contract. The shippers, however, have had a taste of 75c. Ore, and are not much inclined to pay a better rate. It is altogether possible that an unusual amount of Ore will be brought down by wild tonnage, consequently extending the rate controversy through the summer. Ore sales are light, and the prices remain as they have been, \$4.25 for Bessemer old range; \$3.25 for non-Bessemer old range and Bessemer Mesaba, and \$2.75 for non-Bessemer Mesaba.

**Pig Iron.**—The production of Pig Iron in the Valleys is again at the normal rate, and yet there is danger in the present situation. The Coke supply during the week has increased, and the furnacemen have experienced much relief. Some are even able now to collect some stock, which is attributable to the fact that the railroads are operating under less difficulty since the weather moderated, and also to the increased supply of equipment. With these auspicious circumstances the supply of marketable Pig Iron is all but exhausted for the remainder of the year. Some of the big producers here have announced that they are entirely off of the market for the remainder of the year, and also announce that some sales of considerable size have been made for delivery during the first quarter of next year. This being the case, the market is very strong. Some sales of Malleable Pig Iron have been made at Columbus and Iron-ton during the week at \$19 at the furnace, and while the quotation on Foundry is necessarily nominal the same price is named on No. 2 in the Valleys. All Pig Iron men are strongly of the opinion that any one having material can almost name his own prices on quick shipment. The manifest danger in this situation is that prices shall

get beyond the point where business can be done with safety to the consumer. The Bessemer Association will hold a meeting in a short time to decide upon prices for the fourth quarter. The members are determined to prevent an advance if possible, but the market seems to be getting away from them. This is indicated in the action of the Basic producers during the week, who sold some Iron at \$17.50 in the Valley for the fourth quarter delivery. This is all out of proportion to the rate which the Bessemer Association has been contending for—namely, \$16 in the Valleys. The belief seems to be that Bessemer prices will be advanced.

**Finished Material.**—The market seems to be developing exceptional strength, and the mills are having the greatest difficulty yet experienced since the adoption of the novel policy to maintain a conservative attitude. The market has shown very decided runaway tendencies, which are increasing almost daily. With all this the mill men announce very positively that they do not propose to desert their policy, hence that as few changes of prices as possible will be made. Structural Material seems to show the same degree of activity as has been displayed all spring, and this week the surprising announcement is made that some sales have already been made entailing deliveries into the first quarter of next year. The same announcement also contains the information that most of the mills are entirely sold up for the remainder of this year on Structural Steel. An impression has got abroad that the mills have been feeding the stocks of the jobbers, and are enabling them to sell it out to the needy at greatly enhanced prices, yet the mills have persistently refused, for the last few weeks, to sell to any one unless he gave the assurance that the material was not to go into stock or to be the basis of a speculation. Mill quotation remains at 1.70c., and store prices remain at between 2¼c. to 3c. The producers of Iron Bars are divided as to prices. Some mills are still quoting 1.70c., while other big producers have advanced the quotation to 1.80c., Pittsburgh. The Steel Hoop Company are making less and less Iron Bars, as the demand now seems to be for Steel. In Steel Bars some contracts have been taken stipulating deliveries between July this year and July, 1903, which contracts amounted to 500,000 tons. To-day the market has been firmly established on the 1.60c., Pittsburgh, basis, and the knowledge that this advance was coming caused some large orders to be placed during the last week. Reports indicate that about 25,000 tons were covered in this district alone at the old prices. The quotations now are 1.60c., Pittsburgh, for Bessemer Steel Bars, and 1.70c., Pittsburgh, for Open Hearth Steel Bars. Some reports indicate the possibility of an advance in the quotations soon to 1.70c., Pittsburgh, basis. Plates have been entirely sold up for the remainder of the year in most of the larger mills, and the market shows very great activity. The great advanced sale of this material is considered the strongest feature of the market. The quotation continues to be 1.70c. There is quite a demand for Pipe now, as the spring trade seems to be opening out in excellent shape. After the two recent advances the market is firm, and the quotations remain as they have been, Black Pipe bringing 60 and 67 off list and Galvanized Pipe bringing 48 and 55 off list. The buying of Sheets is as active as ever, and the material, especially out of store, shows signs of getting scarce. The base price is from 3.45c. to 3.60c. for No. 27, one pass cold rolled, with 10c. extra being charged for full cold rolled. On the same gauge the mill sales are on the basis of 3c. The Billet market is without activity, because the material is not to be had. Some jobbers, who have been able to obtain odd lots, are getting fancy prices, but the scope of their operations is necessarily limited. The producing mills, however, have no material of which to make disposition, and the only quotation permissible would be one based upon speculative operations.

**Old Material.**—The market this week is without a change, the prices holding steady, the demand being good, with some difficulty being experienced by the middlemen in getting material. The prices remain as follows: No. 1 Wrought, \$18 net; Cast Borings, \$8 gross; Wrought Turning, \$13.75 gross; Cast Scrap, \$14 net; Old



Iron Rails, \$22 gross; Old Iron Axles, \$22 net; Steel Rails, \$17 gross; Old Car Wheels, \$17 gross.

The Bourne-Fuller Company, Iron and Steel merchants, have removed their offices to the eighth floor of the Hickox Building, Euclid avenue and Erie street.

### Birmingham.

BIRMINGHAM, ALA., March 31, 1902.

Irregularity in prices continues to characterize the Iron market, especially for short deliveries. It is easy to find out what the other fellow paid for his Iron, but one cannot tell what he must pay until his order is placed. The price depends upon what grades and delivery are desired and the ameliorating circumstances of each particular case. Regular customers and actual consumers of Iron are among the elect now, and the larger interests, to the extent of their ability to do so, make every effort to satisfy their wants. In some cases these efforts are satisfactory. In others they are failures because the grades desired are not in supply. The policy of adhering to a conservative fixed price is still maintained and sales have been made during the week on the basis of \$12 for No. 2 Foundry when deliveries can be made satisfactory. But the resultant business is not active or large. The premium for short delivery Iron continues to tempt out some that was overlooked, and the order book is in frequent comparison with stock on hand and maturing for delivery. Buyers of prompt shipment Iron continue to advance price on themselves by raising bids. During the past week they fixed it at not less than on a basis of \$14 for No. 2 Foundry. In one or two instances that price was topped. Rumor says \$15 was obtained. No one will plead guilty to the act and no direct evidence of it can be had, but it is probably true. But the fact should not be lost sight of that the resultant business is of the emergency class, and the amount secured is insignificant and to "bridge over" the intervening time to the delivery of maturing contracts. For No. 1 Foundry \$14 was refused because the seller could not supply it. Now as to the class of Iron desired, the buyer is less particular as to special grade than for a long time past. It's simply Iron he wants, and there's a good deal of trusting to the art of mixing to even things up. There is no regularly maintained difference between grades. There is such a difference between what is usual and what actually exists that one is sure to err if he attempts to give it as a guide for action.

The car situation has shown continued improvement and Iron is going out just as fast as it can be loaded. The feeling is growing that the emergency part of the demand is near about satisfied. It is not often that large quantities of any product unduly exalted in price change hands at the topmost values. It is the comparatively few scattering sales of small volume that designate the high water mark of the market.

Since last letter some changes have occurred in the management of the Sloss-Sheffield Company. The president, E. O. Hopkins, has resigned his position. Gossip is rife as to his successor and has settled upon J. F. Maben, the first vice-president, as the coming man. He has large interests in the district and takes great interest in their affairs. Besides the resignation of the president of the company there was also tendered those of Gentry Hillman, the local manager of the furnaces, and the auditor of the company, C. H. Schooler, both taking effect May 1. If these changes portend any new departure in the management no intimation of it has been given out.

Consolidation of certain furnace interests is still being talked, but there is little prospect of its ever materializing in anything but talk. The personnel and management of the Southern Cement Company have changed. Caldwell Bradshaw and L. M. Bradley and associates holding a controlling interest have sold their holdings to Eastern parties, and the new management has organized and elected Daniel Plerson president and treasurer, Harold R. Sauson general manager and secretary. Mr. Bradshaw retires absolutely from the com-

pany and Mr. Bradley remains as salesman and book-keeper.

A prominent member of the world of finance, whose career illustrates the truth of the saying that "Nothing succeeds like success," it is said, will finance the contemplated \$500,000 rolling mill. This would place the project beyond the domain of uncertainty.

The late unusual spell of falling weather has retarded mining operations and several important Coal mines were drowned out. The furnaces have had a trying time of it, but managed to continue in blast. There is yet a good deal of dickering going on about certain important Ore and Coal properties, but they "drag their slow length along" at a snail's pace.

### Cincinnati.

FIFTH AND MAIN STS., April 2, 1902.—(By Telegraph.)

The Pig Iron market is in a state of suspension, so far as the Southern brands are concerned. It is, as a whole, paradoxical in the extreme and a record breaker for unreasonable irregularity. The bottom falls out of one's brain pan and the dictionary goes dry when an attempt is made to diagnose the situation. There is no comfort, except in the assurance that it is not likely to last forever, and the post mortem will probably determine the disease and its finish. We can safely start to work on the statement that the situation is unchanged and then allow readers to draw upon their imaginations as to what this unchangeable basis was a week ago. There are still some people who want Iron and are foolish enough to want it badly, and that for immediate delivery. These people do not seem to be sticklers as to price. They want Iron, and when any of them happens to land an odd lot of insignificant tonnage they pay up to \$2 per ton more than the \$12, Birmingham, basis, for it. There are offers out to Southern furnaces for No. 3 Foundry as high as \$13, Birmingham, this for delivery after September 1, and the furnaces are known to have the Iron to supply the want, but they are declining to recognize a price above \$11.50 for the grade. All this would be distressing enough beyond question, but when it is learned that these same furnaces are actually selling Iron in the Eastern field at \$1 per ton above the \$12 Western agreement limit it makes the average Cincinnati selling agent feel like 30c. or thereabouts. As far as the actual supply for delivery after September is concerned, there is quite a material tonnage of Southern brands not yet contracted. What this Iron will sell for when it does come into sight is a question not easy to answer. It is very hard to believe that the \$12 agreement will survive many months of the present situation. There is a feeling, however, which seems as reasonable as anything else does just now that it will probably be two months before the worst or best will be clearly revealed. It is a well-known fact that some parties to that agreement are just now feeling rather tired of it, but the outcome must very largely depend on the inside motive, if there be one, for the compact. Now as to f.o.b. Cincinnati prices, those given herewith must be taken for just what they are worth. There is not enough spot delivery Iron in existence to make a market. What there is will sell on the basis of the maximum given herewith or even higher. For later delivery there is Iron unsold not now being offered about which the owners say: "When this stock is marketed it will be on the basis of \$12, Birmingham, for No. 2 Foundry, no more, no less." Northern Irons are selling on an advancing basis. Freight rate from Hanging Rock district is \$1.10, and from Birmingham \$2.75. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$18.85 to \$19.60
Southern Coke, No. 2.....	18.60 to 19.10
Southern Coke, No. 3.....	18.10 to 18.60
Southern Coke, No. 4.....	13.75 to 15.25
Southern Coke, No. 1 Soft.....	15.25 to 15.75
Southern Coke, No. 2 Soft.....	14.75 to 16.25
Southern Coke, Gray Forge.....	13.75 to 15.50
Southern Coke, Mottled.....	13.75 to 15.50
Ohio Silvery, No. 1.....	19.50 to 20.00
Ohio Silvery, No. 2.....	19.00 to 19.50
Lake Superior Coke, No. 1.....	18.60 to 19.10
Lake Superior Coke, No. 2.....	18.35 to 18.60
Lake Superior Coke, No. 3.....	17.85 to 18.10
Southern Basic.....	to 16.25
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel, chilling grades.....	\$21.00 to \$21.75
Standard Southern Car Wheel, No. 2.....	20.50 to 21.00
Lake Superior Car Wheel and Malleable.....	21.00 to 22.00

**Plates and Bars.**—The general situation is very strong, and prices are higher. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.92c., with half extras; same in small lots, 1.95c. to 2c., with full extras; Steel Bars, in carload lots, 1.72c. to 1.80c., with half extras; same in small lots, 1.85c. to 1.90c., with full extras; Angles, in carload lots, 2.25c. to 2.35c.; Plates, ¼-inch and heavier, 2c.; 3-16 inch, 2.10c.; Sheets, No. 16, 1.85c. to 1.95c.

**Old Material.**—The market is very active, with an advance on Axles, Steel Rails and Car Wheels. We quote, f.o.b. Cincinnati, as follows, all prices being on the basis of gross tons, except No. 1 Wrought: Iron Axles, \$23.50 to \$24; Steel Rails, rolling mill lengths, \$23 to \$23.50; same short lengths, \$16 to \$16.50; Car Wheels, \$19 to \$19.50.

### St. Louis.

CHEMICAL BUILDING, April 2, 1902.—(By Telegraph.)

**Pig Iron.**—Owing to the continued scarcity of Pig Iron offered in this market the recorded sales show a light order of transacted business, and in the matter of prices some fancy figures are said to have been paid for immediate requirements, and in some cases for delivery beyond the first half, mostly in moderate lots. In our report of last week we regret that a typographical error caused the statement to read: "The larger interests hold to the basis of \$12, Birmingham, for No. 1 Foundry." This should have read No. 2 Foundry. No large transactions are to be noted at this time, and the price movement is often heard as high as \$2 above our minimum quotation, although this is usually for small lots. Of course if Iron were to be offered in any large quantities it is believed that a buyer would be on the spot and pay a high premium for the prompt delivery. We quote for cash, f.o.b. St. Louis, as follows:

Southern, No. 1 Foundry.....	\$16.00 to \$17.00
Southern, No. 2 Foundry.....	15.25 to 16.25
Southern, No. 3 Foundry.....	14.75 to 15.75
Southern, No. 4 Foundry.....	14.25 to 15.25
No. 1 Soft.....	15.75 to 16.75
No. 2 Soft.....	15.25 to 16.25
Gray Forge.....	14.25 to 15.25

**Bars.**—The mills report no change in the volume of demand and inquiry for Iron and Steel Bars, and they are compelled to keep to their highest capacity in order to fulfill requirements. Jobbers report a very good trade and we can note no change in the price-list. We quote from mills: Iron Bars at 1.90c.; Steel Bars at 1.90c. to 2c. Jobbers quote Iron Bars at 2c., and Steel Bars at 2.10c., full extras.

**Rails and Track Supplies.**—The market for Rails and Track Supplies continues to hold to recent conditions, and a continued heavy demand and inquiry is the report from the market at this point. We quote Splice Bars at 1.75c. to 1.95c.; Bolts, Square Nuts, 2.75c. to 2.90c., with Hexagon Nuts, 2.90c. to 2.95c.; Spikes, 2c. to 2½c.

**Sheets.**—The demand for Sheets of all grades is of a very strong and active order, and it is said that it is difficult to get full requirements at times from the mills. Jobbers quote Stove Pipe size, No. 27, at 3.60c. to \$3.65c., and Galvanized Sheets, 70 to 70 and 5 off in round lots.

**Angles and Channels.**—The jobbing trade say that the demand for Small Angles and Channels is of good quality, and volume and prices are without change; 2.30c. base continues to be the quotation for material of this class.

**Pig Lead.**—A fair volume of demand is to be noted in the market for Pig Lead, with prices on a firm basis. We quote Chemical at 4.02½c., and Desilverized at 4.05c.

**Spelter.**—Considerable of a demand has shown itself in the market for Spelter, and coming at this time when the stocks are light at the smelters the price has taken considerable of a rise. It is said that most of the smelters are sold well into May, and 4.20c. is asked at this time.

### The German Iron Market.

ESSEN, March 8, 1902.—Since my last report the improvement in the condition of the market has made decided progress, and unless unforeseen events occur a fairly good business year may be counted upon. Demand from home markets, as well as from abroad, has been quite active during the past few weeks, and orders have been received for all lines in such abundance that the majority of the works are supplied for four to six weeks to come, and some of them until far into the summer. The syndicates and some of the works themselves can make no further deliveries for the second quarter. In all branches of the Iron industry there is an active export movement, the statistics of exports for January showing that no less than 282,807 tons of Iron and Steel, exclusive of machinery, were exported, as compared with 147,261 tons in January, 1901, and 116,099 tons in January, 1900. The imports of Iron and Steel dropped from 70,892 tons in January, 1900, to 48,365 tons in January, 1901, and 22,364 tons in January, 1902.

The following are the principal items in the January exports of 1901 and 1902:

	1901.		1902.	
	Imports.	Exports.	Imports.	Exports.
	Metric tons.	Metric tons.	Metric tons.	Metric tons.
Scrap .....	6,389	1,524	9,048	27,560
Pig Iron.....	33,446	13,209	10,795	34,659
Ingots, Blooms, Billets, &c.....	132	36	6,160	40,454
Girders, Beams, Angles .....	.....	.....	16,297	26,927
Steel Rails.....	.....	.....	11,921	23,393
Sleepers .....	.....	.....	2,038	4,105
Plates and Sheets.	249	208	19,370	27,072
Wire and Wire Rods	526	279	10,177	15,537
Galvanized Wire..	.....	.....	5,471	11,745

There has been somewhat more life in the Ore market, particularly so far as Calcined Spathic Ore is concerned. This grade is now quoted 16 marks. Red Hematite Ore with 48 to 50 per cent. Iron is 10 marks per ton, while Spanish Rubio costs 17 marks, delivered, which is rather high as compared with current prices for Bessemer Pig. Loraine Minnette is offered very freely at low prices. The newspapers print the rumor that the American Steel Corporation have purchased the Ore mines of Gellivara in Northern Sweden. The German works, however, would not be affected by this since they have covered their requirements for Gellivara Ore for a long series of years to come on a sliding scale.

The demand in the home market for Pig Iron remains rather slow, but for export pretty large orders have been placed for special Pig and for Spiegeleisen; 10 to 12 per cent. Spiegel is now quoted 72 marks; White Special Mill Iron, 60 marks, f.o.b. Siegen; German Bessemer Pig, 62 marks, f.o.b. furnace; Basic Bessemer Pig Iron, 57.50 marks, delivered; English No. 3, 66 marks, f.o.b. Ruhrort; Luxemburg Foundry No. 3, 48 marks, f.o.b. Luxemburg; German No. 1 Foundry, 65 marks and No. 3 Foundry, 61 marks, f.o.b. furnace.

The Scrap market has been strengthened by the active export movement and by a better home demand. Dealers are now holding for higher prices. Heavy Cast Scrap costs 52 to 53 marks; Melting Scrap, 40 to 42 marks; Sheet Scrap, 58.50 marks; Cast Borings, 45 to 46 marks; Steel Borings, 46 to 47 marks, and Old Iron Rails, 72 marks, delivered at consuming mill.

So far as intermediate products are concerned the works are very well employed. The syndicate have been in a position to raise prices 5 marks per ton, making them now 80 marks for Ingots, 85 marks for Blooms, 95 marks for Billets and 97 to 98 marks for Slabs, with the well-known export bounties. There has been no increase in activity in Muck Bars. For Rolled Iron prices have risen quite materially, and orders are coming in freely. Steel Bars are now 120 marks, Iron Bars, 127.50 marks, f.o.b. mill, and Hoops and Bands now cost 127.50 to 132.50 marks. There has been an improvement in the quantity of work for the Skelp mills and the prices are firmer. Gas Skelp is quoted 122.50, Boiler Tube Skelp up to 145 marks. The Merchant Pipe business has been very quiet until lately. Now there is a gradual increase in the inquiry, particularly for Boiler Tubes. Prices for Beams and Shapes have been raised 5 marks per ton, as the result of very active inquiry. The Plate mills are well



filled with orders for weeks to come. Locomotive and Boiler Plates are being actively ordered, and for Tank Plates prices are improving more and more. For these 125 to 130 marks are being paid. Boiler Plate is quoted 160 marks. Bridge Plates, 140 marks, f.o.b. Essen, Siegen, Dillingen or Koenigshuette. There is a good inquiry for Sheets, and prices are slowly but steadily rising. They are now 135 to 145 marks.

Developments in the Wire business have on the whole been favorable for the domestic market. Wire Rods are quoted 125 to 127.50 marks. Ordinary Drawn Steel Wire, 135 to 140 marks; Wire Nails, 155 to 160 marks. Open Hearth Rivet Rods are quoted 120 marks, while for Iron Rivet Rods the price is 130 marks. Rivets themselves are quoted 30 marks more.

So far as rolling stock is concerned the State railroads have just placed orders for 763 locomotives, which gives the shops full work for a considerable period. In car building the reaction has not yet ceased, so that further closing down has become necessary. In the Rail trade it may be noted that several large blocks have been ordered for Mexico with German works. Prices for Mine Rails and Light Rails generally are firmer, and are now quoted 100 to 102.50 marks. Standard Rails are 120 to 125 marks, and Glider Rails for street roads 135 to 140 marks.

The Bolt, Nut and Rivet works have quite a good deal of work on hand, but prices are still unsatisfactory throughout. Some inquiries have come up for the machine shops, and more particularly for heavy machine tools and mining machinery.

A notable event has been the American order for a 5000 horse-power rolling mill engine, which could not be delivered fast enough on your side of the Atlantic.

## Pittsburgh.

(By Telegraph.)

PARK BUILDING, April 2, 1902.

**Pig Iron.**—Negotiations are pending between the United States Steel Corporation and the Bessemer Furnace Association for the purchase of a round lot of Bessemer Iron, 150,000 tons or more, for delivery in the last quarter of this year, and it is possible that deliveries may extend in the first quarter of next year. The deal has not been closed, but it is likely that the price will be \$16.50 or \$17, at the furnace, probably the latter figure. The fact that the furnaces are able to get from \$17 to \$17.50 at the furnace for Forge Iron and very high prices for Foundry makes them reluctant to sell Bessemer Iron for less than \$17 or higher. It is a fact that a good deal of Bessemer Iron has been sold at \$17.50 to \$18, at furnace. Several of the furnaces in the Valleys have recently changed from Bessemer to Forge or Foundry Iron, on account of being able to get such high prices for it. We may note a sale of about 25,000 tons of Malleable Bessemer Iron at prices equal to about \$19 at furnace. Forge Iron has sold at \$17 to \$17.50 at furnace, and the market is strong at \$18 to \$18.25, Pittsburgh. Consumers of Foundry Iron are buying heavily and contracts have been made in which deliveries run as far ahead as the first quarter of next year. We quote Bessemer Iron at \$17 to \$18 at furnace, or \$17.75 to \$18.75, Pittsburgh. Forge Iron is \$18 to \$18.75, Pittsburgh, for delivery in April, May and June; No. 2 Foundry is \$19.50 to \$20 for delivery in second quarter, while for delivery all through this year slightly lower prices are made. The demand of blast furnace labor for an eight-hour day has not yet been settled and there are indications of labor troubles among the furnaces after May 1. Leading furnace interests, like the Carnegie Steel Company, National Steel Company and others, are bitterly opposed to this demand and will absolutely refuse to grant it. An eight-hour day for blast furnace labor to become effective must be uniform at all the blast furnaces in the United States, and this does not seem feasible. It is doubtful whether enough labor could be found to work eight-hour shifts at all the furnaces instead of 12 hours, the present practice.

**Steel.**—Small lots of domestic Billets for April, May

and June delivery are held at \$31 to \$32, Pittsburgh. For delivery over second half of the year, about \$30, Pittsburgh, could be done. Inquiries for Steel are mostly for small lots, and the Steel mills have very little to sell. We note a sale of about 500 tons of domestic Billets at a price equal to about \$31, maker's mill; also a sale of 1000 tons of foreign Sheet Bars at a price equal to about \$34.50, Pittsburgh.

(By Mail.)

The scarcity of Pig Iron and Steel is getting worse, and the leading Steel companies are utterly unable to get metal as fast as they need it. Finishing mills are short of Steel right along, and it is probable further importations of both Pig Iron and Steel will have to be made before the situation is relieved. Of course, some Pig Iron and Steel are being imported right along, but the tonnage is comparatively small and does not help out very much. The tonnage of Finished Material that the mills have on their books insures an enormous consumption of Steel for months to come, and this, in turn, means that the output of the blast furnaces will be taken as fast as made. With practically a famine existing in both Pig Iron and Steel, the efforts of the United States Steel Corporation and other smaller consumers to hold the market level are not very successful, and all indications point to still higher prices for Raw Material. Some of the middle men are offering as high as \$18 a ton for Bessemer Iron, and reports are that some sales have been made at that price. Domestic Steel is from \$30 to \$31 a ton at mill, but the tonnage to be had is very small. Stray lots of Billets for prompt shipment have brought higher prices. There have been no important changes in Finished Material during the week, but prices are very firm and a good deal of tonnage is being placed. The demand of blast furnace labor for an eight-hour day after May 1 is causing a good deal of concern. It may be stated here on official authority that the leading furnace interests will not concede this demand, but will fight it to the bitter end. In the first place, it means a materially higher cost for making Iron, and further than this, a complete change in methods of operation at the blast furnaces, and the operators will not agree to this. The outcome of this matter is awaited with a good deal of interest, and it is hoped it will be arranged without serious difficulty.

**Plates.**—Tonnage in Plates is reported by the mills to be steadily improving, and, as noted last week, prices are very firm, with several of the Eastern mills urging an advance in prices. The Plate Association will not meet again until May, unless a special call is issued, and if present conditions in the Steel market continue an advance in the price of Plates at the May meeting is not unlikely. However, some of the leading interests do not favor a high market. Two or three mills outside the Plate Association are able to get from \$2 to \$3 a ton advance over pool prices. We quote: Tank Plate, ¼ inch thick and up to 100 inches in width, 1.60c. at mill, Pittsburgh; Flange and Boiler Steel, 1.70c.; Marine, Ordinary Fire Box, American Boiler Manufacturers' Association specifications, 1.80c.; Still Bottom Steel, 1.90c.; Locomotive Fire Box, not less than 2.10c., and it ranges in price to 3c. Plate more than 100 inches wide, 5c. extra per 100 lbs. Plate 3-16 inch in thickness, \$2 extra; gauges Nos. 7 and 8, \$3 extra; No. 9, \$5 extra. These quotations are based on carload lots, with 5c. extra for less than carload lots; terms, net cash in 30 days. Small lots of Plates from store are sold on the basis of 1.70c. to 1.75c. for Tank, with the usual advances for the higher grades.

**Bars.**—As noted last week, very heavy contracts for Steel Bars, 200,000 tons or more, have been placed with the mills by Implement makers, and some of this tonnage runs into first quarter of 1903. All the Bar mills have large tonnage on their books, enough to keep them running full for the next four to six months. The minimum price of Steel Bars from April 1 is 1.60c., half extras, while small lots bring 1.70c. to 1.75c. All specifications for less than 2000 lbs. of a size are subject to the following differential extras: Quantities less than 2000 lbs., but not less than 1000 lbs., 0.05c. per lb. extra; quantities less than 1000 lbs., but more than 500

lbs., 0.15c. per lb. extra; quantities 500 lbs. or less, 0.25c. per lb. extra; the total weight of a size to determine the extra, regardless of length. The price of Iron Bars has been advanced by all the mills to 1.80c., Pittsburgh, for shipment East and West, and this is now the minimum of the market. For small lots 1.80c. to 1.85c. is being paid. There never was a time when the mills rolling Iron and Steel Bars had as much tonnage on their books as they have now, and the situation is very strong in every respect.

**Steel Rails.**—An unofficial report is that a Western road has placed an order for 50,000 tons of Rails, but the amount is probably exaggerated. The Carnegie Steel Company have been making heavy shipments of Steel Rails by river to Southern points in the past week. We quote at \$28, at mill.

**Ferromanganese.**—We quote foreign Ferro at \$50 in large lots and \$52 to \$55 for domestic, delivered at buyer's mill, price depending on the order and deliveries wanted.

**Structural Material.**—Heavy contracts continue to be placed, the Carnegie Steel Company having booked an order recently for about 15,000 tons for a building in Chicago. The same concern will furnish the material, about 10,000 tons, for the new Farmers' Deposit Bank building, in this city, work on which has actively started. Reports are that a new hotel is to be built in this city by H. C. Frick and that the material, about 5000 tons, has been placed. Numerous other small jobs have been given out and the report is verified that some business has been placed for delivery next winter. The official price of Beams and Channels remains at 1.60c., but a good deal of business is being placed on the basis of 1.80c. and up to 2c. We quote: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inches, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars 1.50c., half extras, at mill; Universal and Sheared Plates, 1.60c. All above prices are f.o.b. Pittsburgh. Actual prices on Beams and Channels are from 1.80c. to 2c., while small lots for prompt shipment bring 2.25c. and higher.

**Sheets.**—There is a moderate demand for Black Sheets, but it is much larger for Galvanized. The mills all have a good deal of business, but deliveries on Black Sheets can be had in from three to four weeks after placing the order. Some of the heavier gauges in Black Sheets are difficult to obtain. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 3c., and No. 28 at 3.10c. for carloads. On large orders for extended delivery some mills might shade these prices \$1 or so a ton. Small lots of No. 27 from store are held at 3.10c. to 3.20c., and No. 28, 3.15c. to 3.25c. We quote Galvanized Sheets at 70, 10 and 5 off in carloads and 70 and 5 in small lots. All the above prices are f.o.b. maker's mill.

**Muck Bar.**—The market is very firm, and there is a good deal of inquiry. We quote best grades of Muck Bar at \$32 to \$32.50, delivered.

**Skelp.**—Iron Skelp is exceedingly scarce, and some of the leading Pipe mills are being seriously crippled in operations on account of not being able to get Skelp as fast as needed. In fact, some of the Tube mills belonging to the leading interest have been compelled to shut down for several days at a time recently, waiting for Skelp to accumulate. We quote Grooved and Sheared Iron Skelp at 1.95c. to 2.10c. Some of the mills rolling Steel Skelp are quoting even higher prices than these.

**Merchant Pipe.**—Tonnage in March was very much heavier than in the corresponding month last year. The slight advances in prices recently made are, we are advised, being firmly held. Discounts on carloads to jobbers are as follows:

Merchant Pipe	Black. Per cent.	Galvd. Per cent.
1½ to 1¾ inch, inclusive.....	60	48
¾ to 12 inch, inclusive.....	67	55

**Boiler Tubes.**—We note a continued good demand, but which is being effected to some extent by labor troubles. For small lots, discounts are as follows:

Steel.	Boiler Tubes.	Up to 22 feet. Per cent.
1 to 1½ inch, inclusive.....		47½
2¾ inch to 5 inch, inclusive.....		65½
1¾ inch to 2½ inch and 6 inch to 13 inch, inclusive..		60
Iron.		
1 inch to 1½ inch and 2½ inch.....		43½
1¾ inch to 2½ inch.....		43
2¾ inch to 13 inch.....		53

**Coke.**—The *Courier* reports the output of Coke last week as 214,765 tons and shipments 11,594 cars. Car supply is only fair, some days being very good and other days poor. A good deal of outside Coke is being sold in markets where Connellsville has been used heretofore almost exclusively. We quote strictly Connellsville Furnace Coke at \$2.25 to \$2.50 a ton on contracts, and 72-hour Foundry Coke at \$2.75 to \$3 a ton. Coke for prompt shipment brings slightly higher prices than these.

The offices of J. K. Dimmick & Co., George S. Griscom, Jr., resident agent, have been removed from 513 Fitzsimmons Building to Rooms 801-802 Murtland Building, Pittsburgh, Pa.

The offices of Goff, Horner & Co., Limited, sales agents for the Muskingum Valley Steel Company, makers of Steel Sheets and also factors in Pig Iron and Steel, have been removed from Lewis Block to the Frick Building, Pittsburgh, Pa.

The offices of the Crucible Steel Company of America have been removed from the Empire Building to the thirteenth and fourteenth floors of the Frick Building, Pittsburgh, Pa.

The offices of J. H. Hillman & Son, Pig Iron brokers and dealers in Coal and Coke lands, have been removed from the Empire Building to rooms 723-724 Frick Building, Pittsburgh, Pa.

## Belgian Iron Market.

BRUSSELS, March 15, 1902.—Without rushing forward and breaking records as the American Iron trade is doing in a fashion stupefying to the old world, the Belgian industry is progressing in all respects. The works have regular occupation and well supplied order books for some months to come. This has permitted them to further advance their prices. The indications are excellent and all that may be desired. The great Belgian establishments are not, however, taking that as a pretext for increasing their output without due consideration, and are going slowly in the matter of raising prices.

The market for Pig Iron is firm, and prices have an upward tendency. The result is that No. 3 Luxemburg Foundry Iron can no longer be obtained below 58 francs. Luxemburg Mill Iron is quoted at 52 francs, and Charleroi Mill Iron at 56 francs. Thomas Pig Iron is in pretty good demand on the part of our Steel works, and is being sold at 64 francs. The weekly capacity of the furnaces in blast on March 15 compares as follows with that of preceding periods:

	Furnaces. in blast.	Total capacity per week. Metric tons.	Mill iron. Metric tons.	Foundry pig. Metric tons.	Bessemer and Basic. Metric tons.
February 15..	26	19,452	4,108	2,247	13,097
March 15....	28	18,795	3,745	2,030	13,020

The condition of the Charleroi, Liège and Luxemburg furnaces at the medium of the month is as follows:

Location of furnaces.	Total No. of stacks.	Number in blast.	Capacity per week. Tons.
Charleroi .....	16	9	5,485
Liège .....	17	14	10,500
Luxemburg .....	6	5	2,800
Totals.....	39	28	18,795

Below are given the exports and imports of Pig Iron and Old Material during the two first months of the years 1902 and 1901:

	Imports.	
	Year 1902, two months. Metric tons.	Year 1901, two months. Metric tons.
Pig Iron.....	55,130	30,342
Castings .....	224	505
Old Material .....	11,585	4,182
Totals .....	66,939	35,029
	Exports.	
Pig Iron .....	4,233	1,607
Castings .....	3,880	3,992
Old Material.....	2,378	5,822
Totals.....	10,491	11,421

There is, therefore, an increase of 31,910 tons in the importations, but also unfortunately a decline of 930



tons in the exports. So far as Old Material is concerned the demand is quite active at this time, but there is little probability that prices will rise further, because they have reached a point altogether too high compared with the other raw materials and with finished products. The market is animated, so far as intermediate products are concerned.

Works running specially on Blooms and Billets are reported to have received important orders from America, and are firm so far as Belgian consumers are concerned. As to Muck Bar, it may be readily purchased at 9 to 9.50 francs per 100 kilos, delivered. The fact that the Germans and the Lorraine Luxemburg Syndicate have raised prices for intermediate products has had the result of permitting Belgian Steel works to increase their output, which had fallen to a low ebb in recent times. Exports have not been particularly brilliant during the months of January and February.

So far as finished materials are concerned the situation has become better during the last few months, but the conditions influencing the cost of production vary very widely, according to the different works, and there are some who are not making any money. The rolling mills would like to see some moderation in the prices for Coal, Pig Iron, Old Material and intermediate products, so that there can be a fair spread between them and finished products. In this way they could gradually reach a maximum of output and cover the losses which they have undergone during the acute crisis. Those who themselves produce the raw materials are, of course, best satisfied with the course of the market.

An event which has been of considerable importance for our Iron works is the meeting held on February 25 at Cologne, where the principal Belgian mills, the French Beam Syndicate and the great German Steel works were represented. It has been decided to adjourn the convention to June 30, but prices, without having been raised, have still been held firmly until the new meeting. The understanding reached has made it possible to resume the export movement more actively. Inquiries are coming in both for Shapes and for Merchant Bars, and buyers are seeking to contract for three or four months to come. So far as our home market is concerned inquiries for building are satisfactory. In Plates there is an abundance of orders, while Sheets and Tank Plates are in a good position. For the home market the quotation is 14.50 francs per 100 kg. for No. 2 Iron Plates, and 15 francs per 100 kg. for Steel Plates. For export the quotation is £5 17s., f.o.b. Antwerp, for No. 2 Plates, and £5 19s. for Steel Plates. For Iron Tank Plates the quotation is £6 9s. to £6 13s.; for No. 12 to 14 Steel Plates, £6 9s. For No. 20 Steel Plates, £8 5s., and for No. 24 Steel Plates, £9 5s. For other products for export we quote: Beams, £4 17s. 6d.; No. 2 Bars, £5 8s.; Steel Bars, £5 10s.; No. 3 Iron Bars, £5 12s.

Below are given the exports and imports of finished products the first two months of the current year, compared with 1901:

#### Belgian Exports of Finished Products.

	First two months, 1902. Metric tons.	First two months, 1901. Metric tons.
Iron and Steel Wire.....	126	158
Beams .....	3,757	4,293
Rails .....	16,721	11,889
Plates and Sheets.....	9,675	7,447
Rolled Iron and Steel.....	40,571	26,571
Nails .....	599	286
Shapes .....	13,717	7,877
Galvanized Iron and Tin Plate.....	629	568
Totals.....	85,795	59,089

As will be seen, there has been an increase of 26,706 tons, or of 45 per cent., and this proves clearly the better condition of our mills. So far as imports are concerned the comparison with last year is as follows:

#### Belgian Imports of Finished Products.

	First two months, 1902. Metric tons.	First two months, 1901. Metric tons.
Iron and Steel Wire.....	1,010	1,277
Beams .....	951	566
Rails .....	113	269
Plates and Sheets.....	1,856	1,175
Rolled Iron and Steel.....	2,818	2,358
Nails .....	143	135
Shapes .....	1,034	1,903
Galvanized Iron and Tin Plate.....	654	568
Totals.....	8,579	8,251

The Chain mills, the Nut and Bolt works and the construction shops for light railroads have noticed a considerable increase in work. Business has not yet been done at particularly satisfactory prices, but after awhile that will follow.

The large bridge and construction shops are still short of orders, and there is being seriously discussed the question of forming a syndicate of the Wire Nail mills.

## Metal Market.

New York, April 2, 1902.

**Pig Tin.**—Throughout the entire week the market was quiet but firm. Prices are at a slight advance above those quoted last week. In London the upward movement is marked. Trading was not very active. At the close to-day the market was strong, with spot quoted 26.40c. to 26.75c. Futures were quoted as follows: April, 26c. to 26.25c.; May, 25.90c. (sales); June, 25.50c. to 26c. London closed £3 higher to-day than last week's quotation. Spot was cabled £119 10s., and futures £117 10s. The statistics for Europe and the United States, as compiled by the New York Metal Exchange, show:

Total visible supply March 31, 1902.....	Tons. 18,131
Against visible supply February 28, 1902.....	17,043
Against visible supply March 31, 1901.....	18,062

**Copper.**—The market is very quiet, with little business of consequence being transacted. Prices are unchanged at 12c. to 12½c. for Lake and 12¼c. asked for both Electrolytic and Casting. The London market closed higher with £53 5s. for spot and £53 7s. 6d. for futures. Best Selected advanced 10 shillings to £56 10s. During the month of March the exports of domestic Copper from Atlantic ports amounted to 19,826 long tons. The total exports since January 1, 1902, exclusive of Southern ports for March, are 49,301 tons, against 24,058 tons for the same period of 1901.

**Pig Lead.**—Is entirely without change. The quotation of the American Smelting & Refining Company is 4.10c. for Desilverized 15 days and 4.12½c. for strict spot. London has advanced a shade to £11 7s. 6d.

**Spelter.**—The market is very quiet. Business was of small volume, and there is nothing of special interest. The market is quoted at 4.35c. for spot. St. Louis is quoted at 4.20c., and the London quotation is slightly higher with £17 15s.

**Antimony.**—Is unchanged. Hallett's is quoted 8c. to 8¼c.; Cookson's, 10¼c., and outside brands, 7½c.

**Nickel.**—As stated in another column, all the Nickel interests other than the Société Nickel of Paris have combined into the International Nickel Company. Prices are unchanged. Ton lots are quoted at 50c.

**Quicksilver.**—Prices are on a basis of \$48 per flask of 76½ lbs. in lots of 56 flasks or more.

**Tin Plates.**—The market is entirely unchanged. The American Tin Plate Company are quoting for delivery until July 1 on a basis of \$4.19 per box of standard 100-lb. Cokes, f.o.b. New York, or \$4 f.o.b. Pittsburgh district. The Swansea quotation has declined 1 pence to 13 shillings 6½ pence.

## Quotations of Iron Stocks.

Cap'l Issued.	Sales.	High-est.	Low-est.	Mar. est.	Mar.
\$10,000,000 Am. Bicycle Co., com.	12,000	4%	5	3	4
20,000,000 Am. Bicycle Co., pref.	9,400	19%	25	14%	3
10,000,000 Am. Bicycle Co. bonds.	344,000	60	27	55	4
29,000,000 Am. Car & F'dry, com.	98,000	32%	21	28%	1
29,000,000 Am. Car & F'dry, pref.	11,500	91%	25	88%	4
American Loco., pref.	11,100	94%	31	92%	7
15,000,000 Bethlehem Steel.....					
45,000,000 Cambria Steel.....	15,200	24	31	23½	20
17,000,000 Colorado Fuel & Iron.	640,000	109	26	86½	5
24,410,900 Crucible Steel, com.....					
24,399,500 Crucible Steel, pref.....					
1,975,000 Diamond State Steel.....	4,400	2¼	14	2	31
15,000,000 Inter. Pump, com.....	7,700	57¼	19	52¼	4
8,850,000 Inter. Pump, pref.....	13,000	94	21	89½	6
11,000,000 International Silver.....	74,000	12%	31	6%	5
10,750,000 Pa., new, com., Phila.	300	39½	11	39	10
16,500,000 Pa., new, pref., Phila.	6,600	90%	31	84	1
12,500,000 Pressed Steel, com.....	25,000	42½	31	30	5
12,500,000 Pressed Steel, pref.....	17,000	86	25	83	13
27,191,000 Repub. Ir. & St., com.	85,000	18%	22	16½	5
20,306,900 Repub. Ir. & St., pref.	41,000	75	24	71%	1
7,500,000 Sloss-Shef. S. & I., com.	2,500	34½	21	33	7
6,700,000 Sloss-Shef. S. & I., pref.	1,200	84½	7	83	27
20,000,000 Tenn. Coal & Iron.....	284,000	72%	21	68½	15
1,500,000 Tidewater Steel.....	9,500	7	15	6¼	31
510,361,300 U. S. Steel Co., com.	270,000	43½	4	41½	21
508,511,200 U. S. Steel Co., pref.	267,000	95%	17	93%	12
1,500,000 Warwick I. & S.....	12,400	5¼	8	4%	24

## The New York Machinery Market.

NEW YORK, April 2, 1902.

In the machine tool trade new business was not quite as heavy during the last week as it was the week previous. Inquiry was somewhat lighter and orders less numerous. There were no large orders for machine tools. In short, the general tone was somewhat quieter. The pump trade is also slackening off a little at present. Nevertheless the factories are booked far in advance and the little lull is not greeted with apprehension. There is still a great volume of unclosed business which promises to ward off any protracted falling off on orders. This business is of the kind that requires time to close, but no doubt is felt as to the ultimate outcome of the negotiation. Engine builders are busier than ever just now. Their shops are crowded with work and deliveries are months off. Throughout the last week or two orders have come in at a great rate. Deals that have been pending for many weeks have been suddenly closed. Prices are firmer than they were, for despite the fact that shops were busy some of the orders taken recently were at cut prices. The cutting was done by the dealers rather than the builders, however. With crowded shops this is quite natural, as the dealers fear that they are handicapped in procuring the contract by the poor delivery specified by the factory, and they go in to get the business on price. Now that there is more disposition shown to close, despite long deliveries, the dealers are holding a little more firmly on price. Manufacturers of feed water heaters, steam economizers, condensers and steam specialties are rushed with orders and have their shops well filled with work. Almost all of the contracts placed nowadays for power plant equipment call for well laid out systems. They are coming from old well-known concerns who are replacing their original power plants with efficient and economical apparatus. Consequently the specialty manufacturers are favored with a heavy demand for their product.

One of the most important matters that has come to the attention of the trade in the last few days is the project of the Convertible Car Company. This concern have offices at 32 Broadway, New York. They have selected a site at Bloomsburg, N. J., for the location of their plant. The concern propose building cars for local traction which will be immediately changeable from open to closed cars at any moment during use, obviating double equipment. The new works are to cover 23 acres of land fronting on both the Lehigh Valley and Central Railroad of New Jersey lines. The plant is to have an initial capacity of 600 cars a day. The general plans, so far as decided, provide a main building 600 feet long by 110 feet wide, with wings covering 300,000 square feet. The boiler and power house is to be 50 x 80 feet, and other buildings are to be dry kiln, 30 x 70 feet; offices, 50 x 50 feet; store building, 30 x 150 feet, and building for paints, varnishes, &c., 30 x 50. The buildings are to be of steel, brick and wood, and the floors throughout will be of concrete. All machinery will be operated electrically, heavy machines to be equipped with separate motors. The power will be generated by a 3-unit system. There will be three 260 horse-power engines direct connected to generators. Three large boilers will be used, together with all the accessories of a strictly modern plant. None of the equipment has been purchased as yet. The company are capitalized at \$825,000, of which \$250,000 consists of 5 per cent. 30-year gold bonds, \$75,000 cumulative preferred stock and \$500,000 common stock. For the new plant \$125,000 is to be expended. An equal amount is set aside for working capital. H. Wm. Romunder is the president of the company.

The stockholders of William Cramp & Sons' Ship & Engine Building Company will hold their annual meeting on May 29. At this meeting a proposition will be presented to issue \$4,000,000 5 per cent. bonds, which may be converted into stock at par. The proceeds from the increased capital will be used in purchasing land and for the construction of new shops.

As noted in another column, the Standard Steel Car Company of Pittsburgh have decided to locate their new plant at Butler, Pa. It will be recalled that this con-

cern have made some heavy purchases of machine tools for this plant. Additional purchases are to be made.

It will be recalled that the Chihuahua & Pacific Railroad Company purchased a large equipment of machine tools for installation in their shops at Chihuahua, Mexico. The entire plant was destroyed by fire last week, and the company are now preparing specifications for immediately replacing the shops. The matter is in charge of Thomas J. Brennan of 80 Broadway, New York. The damage exceeds \$100,000.

Bonds to the extent of \$50,000 will be issued by the Compressed Air Company of 24 State street, New York, for the improvement of their plant at Rome, N. Y., the Rome Locomotive & Machine Works. H. Monkhouse, the member of the Board of Directors, located at Rome, is to be in charge of the work. Henry D. Cooke is the president of the company.

Fred. F. Smith, secretary and treasurer of the Ferracute Machine Company of Bridgeton, N. J., advises us: "We are adding a new room for storage of castings, about 20 x 30 feet; casting, cleaning and filling rooms, 24 x 40 feet, and a new bay for erecting our heavier machines on our machine shop floor. This bay will be 16 feet wide by 45 feet long, with an 8-ton traveling crane. We are also erecting a second-story room, 22 x 34 feet, for storing finished machinery, with a crane, &c., for loading our light machinery directly on the cars of the Pennsylvania Railroad. Our heavy machinery is loaded by a new 15-ton electric crane, which we have recently erected. We will also probably extend our pattern shop, making the addition about 18 x 20 feet. We have within a short time past erected a new forging shop, 25 x 40 feet, fitted with traveling cranes and gas tempering apparatus. We have also made some other improvements to our buildings. We have just installed a new 72-inch Gould & Eberhardt gear cutting machine and a 62-inch Bullard boring mill for boring and turning up fly wheels and large gears; also a key slotting machine, and a Brainard milling machine, and we may add some other small tools, &c. We are very busy with orders for a considerable time ahead. We have just received an order from one of the large electrical companies for a heavy press, much like the one recently illustrated in the columns of *The Iron Age*, which will give an extreme pressure of 500 tons. It will weigh in the neighborhood of 60,000 pounds, the distance between columns being 76 inches; height about 14 feet, and the total length about 12 feet. We are doing considerable in the line of electrical outfits for armature work, and have recently shipped a large amount to the new Manchester factory of the Westinghouse Company, and also of the General Electric Company in England. We are also furnishing a considerable amount of machinery for Government mints, and have recently sent an outfit to an English mint; also a large 400-ton coining press to British India; and are now shipping an outfit of presses, rolling mill and electrical apparatus, &c., to the Government of one of the South American countries, and another outfit to the Government of Peru. We are now employing more hands than ever before, and turning out a larger amount of machinery, and are from time to time adding new sizes and designs of presses."

S. D. Nevin, proprietor of the Nevin Iron Works, Lowville, N. Y., has an inquiry out for a 36 x 36 inch by 10 foot planer, a shafting lathe of 24-inch swing and 20-foot bed, an 8-foot boring mill, a back geared milling machine and a 24-inch shaper. A new plant is being built. Pumps and wood pulp machinery constitute the principle product of the concern.

The Perth Amboy Shipbuilding & Engineering Company, whose New York office is located at 11 Broadway, have acquired the plant and adjoining property of the late Hugh Ramsay at Perth Amboy, N. J. It is intended to enlarge the plant sufficient to permit the construction of vessels up to 750 feet in length. Plans for plant extension have not been definitely decided upon.

Edward S. Boyd, secretary and treasurer of the Woodbury & Southbury Electric Railway Company of Woodbury, Conn., is negotiating for the purchase of a 1600 foot tube and impulse water wheel dynamo and complete equipment for hydraulic electric power plant.



No contracts have been placed as yet. The principal object is to furnish electric lighting to the municipality of Woodbury.

It has been decided to remove the plant of the Hayden & Derby Mfg. Company from Bridgeport, Conn., to Boston, Mass. The report that the Ashcroft Mfg. Company's plant is to be removed from Bridgeport is absolutely without foundation. The present plant is, in fact, to be enlarged.

The engine order in connection with the power equipment of the new Astor Hotel, Forty-sixth street and Broadway, has not been awarded as yet. The installation will be of about 1000 horse-power. Clinton & Russell, 32 Nassau street, New York, are the architects.

The Taunton Locomotive Mfg. Company, through their agent, Charles H. Paine of 85 Liberty street, New York, have received an additional order for Wainwright expansion joints to be installed in the new power station of the Manhattan Railway Company at Seventy-fourth street and East River.

McClare, Hamilton & Rumner of 85 Liberty street, New York, have sold a complete electrical equipment to the Warwick Brewing Company of Newport News, Va. The plant is to develop 150 kw. To the Locomobile Company of America they have sold another 150 kw. direct connected generating set.

Strong & Trowbridge Company of 21 State street, New York, are inquiring for machines to cut and level down marble slabs, soap making machines and machines for transforming ordinary domestic soda into caustic soda, rope, twine and thread making machines.

The Pittsburgh offices of the Niles Tool Works Company, Bement, Miles & Co., The Pond Machine Tool Company, Pratt and Whitney Company, have been removed to 1223-1224 Frick Building.

The Camp Engineering Company, 47 West Lake street, Chicago, request catalogues of gas and gasoline engines.

**The Standard Steel Car Company.**—PITTSBURGH, PA., April 2, 1902.—The Standard Steel Car Company, recently organized in Pittsburgh by J. M. Hansen and others formerly connected with the Pressed Steel Car Company, have bought a site of 300 acres of land at Butler, Pa. On 100 acres of this land the Standard Steel Car Company will erect a very large steel car plant, the additional 200 acres to be held in reserve for allied interests and for homes for their employees. All the orders for machinery have been placed, and all machines are now under way. Contracts for the steel buildings were placed some time ago, and delivery of the material will commence this week. The plant to be erected will be modern in every way, and electrical power will be used wherever possible. One innovation in the building of factories will be that the main building will contain no steam power whatever, all the power appliances used to be electrical. The company will manufacture all kinds of freight cars, both steel and wooden, and including wooden box cars with steel underframing. An attempt will be made to use standard shapes, which will permit repairs to be made to cars without returning them to the point of manufacture.

**An Electric Consolidation.**—PITTSBURGH, PA., April 2, 1902.—(By Telegraph.)—The report is current in Pittsburgh that the Westinghouse Electric & Mfg. Company and the General Electric Company are to be consolidated. F. K. Park of New York and about 15 expert accountants arrived in Pittsburgh on Tuesday evening, and their visit is said to be for the purpose of auditing the books of the Westinghouse Electric & Mfg. Company preparatory to a merger of that company with the General Electric Company. No official statement of the matter, however, has been given out.

At a meeting of the stockholders of the Pittsburgh, Bessemer & Lake Erie Railroad held in the Carnegie Building, Pittsburgh, Andrew Carnegie retired from the directorate for the reason that he found it impossible to attend meetings of the Board of Directors and also because of his desire to retire from active business. E. S. Mills of New York left the directorate for a simi-

lar reason. The new directors taking the place of Mr. Carnegie and Mr. Mills are G. H. Kepler and E. H. Gray.

### The Union Steel Company.

PITTSBURGH, PA., April 2, 1902.—(By Telegraph.)—Mackintosh, Hemphill & Co. of Pittsburgh have received a contract from the Union Steel Company of this city for a 40-inch blooming mill with tables for the new basic open hearth steel plant which the Union Steel Company will build at Donora, Pa. Other contracts for the blast furnaces and steel plant are being let by the Union Steel Company and active work commenced on this plant, which is to consist of two blast furnaces and six or more 50-ton open hearth steel furnaces.

### PERSONAL.

Frederick W. Paul, formerly of the Steel Company of Scotland and now general manager of the Shelton Iron, Steel & Coal Company, Limited, of Stoke-on-Trent, is now in this country. He is travelling in company with James G. Jenkins of Glasgow, who is more particularly interested in iron ore mining.

President C. A. Coffin of the General Electric Company has returned from a nine weeks' tour in Europe.

E. H. Gary, chairman of the United States Steel Corporation, is to be one of the directors of the new Federal Trust Company of Chicago.

Charles F. Brooker of the Coe Brass Company, Torrington, Conn., is a director of the new Trust Company of the Republic of New York.

John Bindley, the well-known hardware merchant of Pittsburgh, has been elected a director of the Alabama Steel & Wire Company, Birmingham, Ala.

Henry W. Hartman of Pittsburgh sailed for Europe on Wednesday, March 26.

Erwin S. Sperry, metallurgist, chemist and assayer, has established a laboratory at 260 John street, Bridgeport, Conn., for the analysis of iron and steel, metals and alloys, fuels, slags, ores, clays, &c. Mr. Sperry makes a specialty of the manufacture of brass and the alloying of metals.

J. J. Shannon has resigned as superintendent of the Ensley furnaces of the Tennessee Coal, Iron & Railroad Company, at Ensley, Ala.

George B. McCormick and A. H. Woodward have been elected directors of the Woodward Iron Company of Birmingham, Ala.

W. H. Crawford, superintendent of the Trussville furnace of the Lacy-Buek Iron Company, at Trussville, Ala., has resigned in order to become manager of the Hillman Land & Iron Company, at Grand Rivers, Ky.

Earl Hanna, chief engineer of the Dominion Iron & Steel Company, at Cape Breton, Nova Scotia, and formerly employed at the Edgar Thomson mills of the Carnegie Steel Company, has assumed charge of the erection of the blast furnaces of the Union Steel Company at Donora.

C. F. Banning of Banning, Cooper & Co., Pittsburgh, sailed for Europe last week.

Homer J. Lindsay, assistant to W. E. Corey, president of the Carnegie Steel Company, has returned to Pittsburgh after a two months' visit to California.

At the annual meeting of the New York Metal Exchange the following officers were elected: President, Robert M. Thompson of the Orford Copper Company; vice-president, Adolph Lewisohn; treasurer, Charles S. Trench of Charles S. Trench & Co. The Board of Managers were selected as follows: B. Hochschild of American Metal Company, Limited; H. H. Hendricks of Hendricks Bros.; L. Nachmann of L. Nachmann; Julius H. Lobdell of J. H. Lobdell & Co.; Jesse Lewisohn of United Metals Selling Company; Wm. Jay Ives of Wm. Jay Ives; George W. Jaques of George W. Jaques; J. H. Lang of National Lead Company.

### Iron and Industrial Stocks.

The intervention of the holidays has made the week under review a light one in stock transactions. Generally speaking, the market on Monday was very close to the level of Thursday last and the fluctuations have not been large except in Colorado Fuel & Iron stock, which is being manipulated. American Car & Foundry stock has weakened owing to the disappointment created by the financial statement. The United States Steel issues have been somewhat firmer. We print the statement of net earnings below. The Executive Committee and the Board of Directors have unanimously approved the proposed bond issue of \$250,000,000 5 per cent. bonds to retire \$200,000,000 preferred stock and to provide additional working capital. The plan will now be submitted to the stockholders at a meeting to be held on May 19 in Jersey City.

**United States Steel Corporation.**—The following official statement of earnings has been issued:

*Net Earnings from Operations for the Year Ending March 31, 1902.*

April, 1901.....	\$7,356,744
May, 1901.....	9,612,349
June, 1901.....	9,394,747
July, 1901.....	9,580,151
August, 1901.....	9,810,880
September, 1901.....	9,272,812
October, 1901.....	12,205,774
November, 1901.....	9,795,841
December, 1901.....	7,758,298
January, 1902.....	8,901,016
February, 1902.....	7,678,583
March, 1902 (estimated).....	9,700,000

Total net earnings.....\$111,067,195

The above net earnings were arrived at after deducting, each month, the cost of ordinary repairs, renewals and maintenance of plants, and interest on bonds and fixed charges of the subsidiary companies.

Less amounts set aside for the following purposes—

viz.:

Sinking funds on United States Steel Corporation bonds and bonds of subsidiary

companies.....\$3,059,913

\*Depreciation and reserve funds.....12,339,782

\$15,399,695

Balance.....\$95,667,500

Interest on United States Steel Corporation's bonds

for year ending March 31, 1902.....15,200,000

Balance.....\$80,467,500

Dividends for the year on stocks of United States

Steel Corporation—viz.:

Preferred, 7 per cent.....\$35,682,832

Common, 4 per cent.....20,309,601

Dividends on outstanding stocks of sub-

sidary companies.....25,350

56,017,783

\*Undivided earnings for the year applicable to increase "Depreciation and Reserve Fund" accounts, new construction or surplus.....\$24,449,717

**Atlas Engine Works of Indianapolis.**—The shareholders recently voted to increase the capital stock from \$550,000, of which \$350,000 was preferred, to \$2,000,000, divided equally into common and preferred. Of the new issue of preferred \$350,000 is being used to retire the old preferred stock issued in 1895, and the remaining \$650,000 has been bought by the Union Savings Bank & Trust Company of Cincinnati and the Indiana Trust Company of Indianapolis, and was recently offered by them to the public at 107½. The preferred stock is 6 per cent. cumulative, nontaxable and nonassessable, par value of shares \$50. Interest payable quarterly, February 1, May 1, August 1 and November 1. Redeemable at par May 1, 1937, with the option to redeem after May 1, 1922, at 110 and interest; and after May 1, 1932, at 105 and interest. The company manufacture portable and stationary engines and boilers. Upward of 22,000 of their engines are in use, the business having been conducted successfully for over 20 years. The average net profits for the last three years were \$322,525, or over five times the dividend on the preferred stock. For the security of the preferred stockholders the company agree to pay into a sinking fund each year, beginning with May 1, 1913, one-tenth of the net profits, after deducting the dividends on the preferred stock, for the ultimate retirement of said preferred stock. The balance sheet of October 31, 1901, shows total assets of \$1,462,520, over against which were capital stock \$550,000; accounts and notes payable, \$362,520; surplus, \$550,000. These assets will be increased \$650,000 by the proceeds of this preferred stock, and the common stock is to be increased to \$1,000,000, of which \$750,000 will be paid up and outstanding, and \$250,000 will

remain in the treasury. The directors are H. H. Hanna, M. R. Moore, R. M. Coffin, E. K. Marquis, H. H. Hanna, Jr.

**Diamond State Steel Company.**—The balance sheet of the Diamond State Steel Company, as of December 31, 1901, is as follows: Assets—Cost of real estate, plant, &c., \$4,386,943; rolls, patterns and small tools, \$153,214; stocks, bonds, &c., owned, \$54,295; accounts and bills receivable, \$404,817; stock on hand, \$595,987; cash, \$331,549; interest, insurance and taxes paid in advance or accrued, \$9547; total assets, \$5,936,355. Liabilities—First mortgage bonds, \$1,000,000; preferred stock, \$2,250,000; common stock, \$2,000,000; accounts and bills payable, \$639,489; net profits for eight months, \$46,866; total, \$5,936,355. The net profit, \$46,866, is the balance after deducting from the gross profit, \$164,899, the following items: Renewals and repairs, \$51,366; depreciation, \$40,000; bond interest, \$26,000.

It is stated that the American Can Company will issue their first annual statement of earnings about April 25 next. It is claimed that a small amount has been earned on the common stock, and that dividends on the preferred will be commenced at once. Business already booked for the current year is said to exceed that of the entire first year.

The Crucible Steel Company of America of Pittsburgh, Pa., paid a dividend of 1¼ per cent. on their preferred stock last week. The amount distributed was \$437,500.

The American Car & Foundry Company report for the three months ended February 28 last net earnings of \$780,642, against \$918,798 in the same period of the previous year, a decrease of \$138,156. The net earnings for the first ten months of the fiscal year, which ends April 30, were \$2,806,118, against \$3,466,425 in the corresponding period of the previous year, a decrease of \$659,907.

The stockholders of the William Cramp & Sons Ship & Engine Building Company will hold their annual meeting on May 29. At this meeting a proposition will be presented to issue \$4,000,000 5 per cent. bonds which may be converted into stock at par. Proceeds from the increased capital will be used in purchasing land and for construction of new shops.

**Dividends.**—The Rhode Island Perkins Horseshoe Company have declared a quarterly dividend of 1¼ per cent. on their preferred stock, payable April 15.

At the annual meeting of the Nova Scotia Steel & Coal Company, Limited, stockholders, held at New Glasgow recently, a 5 per cent. dividend was voted on the common stock. The usual 8 per cent. dividend will be paid on the preferred stock.

The American Car & Foundry Company have declared the regular quarterly dividends of 1¼ per cent. on their preferred stock and ½ per cent. on their common stock, payable May 1. Books close April 10 and reopen May 2.

The Washington Charcoal Iron Tin Mills, Washington, Pa., have declared a quarterly dividend of 3 per cent.

The directors of the United States Steel Corporation have declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable on May 15, and a quarterly dividend of 1 per cent. on the common stock, payable on June 30.

**Pittsburgh Freight Rates.**—PITTSBURGH, PA., April 2, 1902.—(By Telegraph.)—A quiet movement is being inaugurated by Pittsburgh iron manufacturers for the purpose of making a demand upon the various railroads for lower freight rates on iron and steel products. For several years the manufacturers have been complaining that freight rates out of Pittsburgh were too high. About a year ago the railroads made a reduction in rates out of Pittsburgh of 5 cents a ton to the seaboard and 3 cents a ton to Chicago. The manufacturers protested that the reduction was too small, but the railroads would offer no better terms, promising, however, to consider the matter later on. The manufacturers then confidently expected a second reduction in rates to be made, but their hopes were not realized.



## New York.

NEW YORK, April 2, 1902.

**Pig Iron.**—There have not been any large purchases of Foundry Pig Iron during the week, but the market continues very firm and considerable premiums are being paid for early delivery. We do not learn of any additional purchases, for importation, of foreign iron. We quote for forward delivery, Northern Irons: No. 1, \$19.50 to \$19.75; No. 2 X, \$18.50 to \$18.75; No. 2 Plain, \$18 to \$18.25; Gray Forge, \$17.50 to \$17.75, at tidewater. Tennessee and Alabama brands are as follows: No. 1 Foundry, \$16.75, the official quotation, to \$18; No. 2 Foundry, \$15.75 to \$17; No. 1 Soft, \$16.75 to \$18; No. 2 Soft, \$16.25 to \$17; No. 3 Foundry, \$15.50 to \$16.50; No. 4 Foundry, \$15 to \$16; Gray Forge, \$15 to \$15.75.

**Cast Iron Pipe.**—Some good contracts have been taken both East and West by Eastern shops. The volume of business continues very heavy, and prices are firm. We quote \$28.50 and \$29.50, tidewater, per gross ton.

**Finished Iron and Steel.**—There have been closed subject to the final settlement of financial arrangement about 10,000 tons of Structural Material for buildings in this city. The Astor Hotel at Forty-second street and Broadway, involving about 6000 tons, has also been finally settled. For prompt delivery and for small quantities considerably higher prices are being paid than our quotations at tidewater, as under: Beams, Channels, and Zees, 1.75c. to 1.95c.; Angles, 1.75c. to 1.90c.; Tees, 1.80c. to 1.90c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.78c. to 1.85c. for Tank, 1.90c. to 1.95c. for Flange, 2c. to 2.05c. for Fire Box. Refined Bars are 1.80c. to 1.85c.; Soft Steel Bars, 1.80c. to 1.85c.

## A New Copper Contract.

The special rules governing transactions in standard copper between members of the New York Metal Exchange to go in force April 15, 1902, provide a contract as follows:

NEW YORK,.....190....

In consideration of one (1) dollar in hand paid, the receipt of which is hereby acknowledged,.....ha..... this day sold to (or bought from)..... about.....tons, of 2240 pounds each, of Standard Copper, the qualities, descriptions or brands deliverable on this contract, being those specified in the list below, at.....cents per pound, deliverable at seller's option during..... 190....

Sellers have the option of delivering each 25 tons, either in refined or rough quality. Refined to be invoiced at the above price without any discount. Rough to be invoiced with an allowance of a discount of two and one-half (2½) per cent. (See also Special Rule No. 3.)

This contract is made in view of and in all respects subject to the By-Laws and Rules established by the New York Metal Exchange, in force at this date.

(Signed).....

The following is a list of brands of refined copper deliverable under this contract in cakes, ingots, ingot bars or tiles:

AMERICAN: LAKE—Adventure, Allouez, Arcadian, Arnold, Atlantic, Baltic, Calumet & Hecla, Centennial, Champion, Franklin, Isle Royal, Mass Consolidated, Michigan, Mohawk, Osceola, Phoenix, Quincy, Tamarack, Trimountain, Wolverine.

CASTING—M. A., B. C. W., O. C., S. C. C., A. B. S., C. N. C., P. D. Co.

ENGLISH: Tough and best selected, being the manufacture of the following firms, of usual good merchantable quality, and bearing their recognized brands:

Bede Metal & Chemical Company, Limited.

John Bibby, Sons & Co.

Thomas Bolton & Sons.

Broughton Copper Company, Limited.

Cape Copper Company, Limited.

Elliott's Metal Company, Limited.

Henry Hills & Son.

Charles Lambert & Co.

Landore Copper Company.

Logan & Co.

Neville, Druce & Co.

Newton, Keats & Bolton.

Rio Tinto Company, Limited.

W. Roberts.

St. Helena Copper Company, Limited.

Tharsis Sulphur & Copper Company, Limited.

United Alkali Company, Limited.

Vivian & Sons.

H. H. Vivian & Co., Limited.

Williams, Foster & Co.

Pascoe, Grenfell & Sons, Limited.

AUSTRALIAN: Cobar—E. A. C. C.—Hope—Lloyd—N. G. E.—P. C. C.—Walleroo.

CHILIAN INGOTS: Lota—Urmeneta.

GERMAN: H. D. K.—H. O. K.—M. R.

JAPANESE: Furukawa Small Ingots, Ani Tiles, Sumitomo Ingots.

The list of electrolytic brands in cathodes, ingots, cakes, wire bars or ingot bars is as follows:

AMERICAN: Anaconda, Balbach, Baltimore, Chicago Copper Refining Company, Great Falls, N. E. C., Nichols, Orford Copper Company, Perth Amboy, Raritan.

ENGLISH: Elliott, Lambert, James Lewis & Sons, Mersey, Vivian & Sons.

GERMAN: N. A., Oker, Kayser.

The list of brands of rough copper is as follows:

AMERICAN: A. C. C.—B. & M.—C. Q.—O. D.—Detroit—T. C. C.

CHILIAN: A. Edwards—B. Larrian—C. C. C.—Chuchini (C. Lopez)—C. Julian, Cabildo—C. M. M. (Compa. M. de Maipu)—C. V. Angeles (R. Humeres)—E. C. T. (E. Concha y Toro)—E. E. C. (J. & J. Edwards)—Felix Vicuna—F. P. P. (Perez)—G. (Geisse)—Huldobro Hnos—I. V. (Villaroel)—J. J. E. (Echeverria)—Lambert—Lambert V.—Las Palmas, M. de F. (F. Zanetta) Lota—Maltenes, C. C. y C. (Cousino)—U. (Undurraga)—Urmeneta—V. A., Catemu (Vidal Aragon) V. H. (Varas Hnos)—Vicuna (S. Vicuna & Co.)—Yllapel, Y. Silva.

ENGLISH: C. L. & Co.—Ditton—H. H. S.—Morfa—V. S., U. A. Co.

TURKISH: Tokat.

## The International Nickel Company.

On Tuesday the organization of the International Nickel Company was completed. The new concern consolidate all of the nickel interests in existence with the exception of the Société Nickel of Paris, who are controlled by the Rothschilds. The new company have a capitalization of \$9,000,000 common stock, \$9,000,000 6 per cent. noncumulative preferred stock and \$10,000,000 5 per cent. 30-year bonds. They are a holding company and it is purposed to take over in exchange for their stock and bonds the entire capitalization of the following companies, control of all of whom has already been obtained:

Orford Copper Company.

Canadian Copper Company and the Anglo-American Iron Company and Vermillion Mining Company, who are subsidiary concerns of the Canadian Copper Company, although operated individually.

The Nickel Corporation of London.

The Société Minière Caledonienne of New Caledonia.

The American Nickel Company of Camden.

The following officers and directors were elected: Chairman of the board, Robert M. Thompson, president of the Orford Copper Company; president, Ambrose Monell, assistant to the president of the Carnegie Company and metallurgist of that company; secretary, Stephen H. P. Pell; treasurer, Joseph Claudet; general counsel, Max Pam; directors, R. M. Thompson, Ambrose Monell, E. C. Converse, Max Pam, John R. De Lamar, Joseph Wharton, Millard Hunsicker, chairman of the board of the Nickel Corporation of London; Archibald W. Maconochie, and Leslie D. Ward of Newark, N. J. The Executive Committee consists of Messrs. Thompson, Monell, Converse, De Lamar and Pam.

**The Sharon Steel Hoop Company.**—The Sharon Steel Hoop Company, Sharon, Pa., have given a contract to the Columbia Bridge Company, Pittsburgh, for the buildings to contain their new open hearth steel plant at Sharon. There will be two main buildings, each about 300 feet in length and 75 feet in width, and to contain the open hearth plant and the other the blooming and bar mills. There will also be several smaller buildings to contain the engines and boilers.

A petition in bankruptcy has been filed by the Hussey Steel Company of Pittsburgh, with works at New Kensington, Pa. The concern manufacture bars, bands, cold rolled strips and deep stamping and deep drawing stock.

The McCormick Harvesting Machine Company of Chicago will erect a four-story warehouse in Allegheny, Pa., to cost about \$75,000. The company will carry a stock of harvesting machines in the new building.

# HARDWARE.

THE problem of consolidation, which is attracting so much attention in these days, constantly presents new phases, since in these times of strenuous business life and change in business methods we make history very fast. It is patent enough that the general sentiment has largely shifted, and that the aim is now of control and supervision rather than of unreasoning hostility and repression. It may well be doubted, however, whether any legislation beyond that of providing necessary safeguards will be of enduring character or exercise any permanent effect upon the ultimate solution of the problem. The experience of the past is that legislative meddling with commerce is generally productive of more harm than good, and that economic problems work out their own solutions without much regard to the ideas of the lawmakers.

The real question before the trade is whether consolidation will be successful in the long run to anything like the extent which its advocates claim. That it will not succeed in eliminating competition may be regarded as certain. The real test of the principle is not afforded in these times of almost unparalleled prosperity, but the stress will come when existing conditions are entirely changed. That many consolidations will then come to grief may be assumed as almost certain. What will survive of the principle of consolidation and its efficacy as a panacea for the ills of the trade remains to be seen. The effort to unite the interests of many jobbing houses in one corporation is being made at a time which seems favorable to its immediate success, but its projectors must remember that the day of reckoning is coming, and that elaborately wrought theories and fantastic expectations will not avert disaster unless the enterprise—which few in the trade believe—will be able to hold its own under the operation of the inexorable laws of trade, which promise to militate against it.

These considerations have an especial interest at this time, when the consummation of the efforts which have been making for the amalgamating of jobbing interests in one colossal corporation are thought to be on the point of fulfillment. While those identified with the project refuse to disclose the facts in the case, there is reason to believe from the important conferences being held in this city, at which many representative jobbing houses are present, as well as from intimations incidentally given out, that the efforts will be consummated in some form. The number of houses which will thus be brought together, the lines on which they will operate and other details are matters on which a discreet reticence is observed. There is a possibility, of course, that the whole thing may fall through, but its projectors express the most unbounded confidence that it will be carried to a successful issue. Over against their confidence, also, that it will be feasible to make complete success of the consolidation after it has taken its place in the trade, must be set the almost universal opinion of the trade at large that there are no rational grounds by which the undertaking cannot be justified as a permanent financial success.

The influence of the retail organization movement is beginning to make itself felt in at least one particular. The interference with the retailer's business by the jobbers and manufacturers who go to his customers to dispose of their goods has long been and still is a grievance of which the retail merchant complains. It is no-

ticeable, however, that there is now much less of this in the West than in the East or South. It is more than a coincidence that the States where this interference has been diminished are those in which retail organization has brought the merchants together, and given emphasis to the claims which they make that their business shall not be encroached upon by those from whom they purchase their goods. Not long ago it was a frequent thing at gatherings of Hardware merchants in the West to hear many complaints against jobbing houses who had taken away their trade, as sales were made direct to consumers in their territory, but at the recent meetings of most of the associations, while this matter was referred to, it was evident that the evil had been greatly diminished and that the jobbers were prompt to remove cause for complaint when the matter was brought to their attention officially by the representatives of a strong organization. In the East where retail Hardware association is less developed there is much ground for complaint, as evidenced by references which are made to the matter wherever a group of Hardware merchants assemble to discuss trade conditions. The success which has attended the efforts of retail associations in this regard promises well for their further usefulness.

It is an interesting fact that the stimulus to exertion provided by outside competition has, in some of the large industrial organizations, been supplied by a friendly rivalry between the various mills or factories. Superintendents have been pitted in generous strife against each other, and results have been obtained that even surpassed original expectations. The larger mills have found that they could learn some things from the smaller ones, and the extent of the aggregation has made possible an efficient organization, far reaching economies, and a specialization of labor not possible in a single plant.

## Condition of Trade.

Perhaps the most marked feature of the trade at present is the steadiness and strength of the market in standard lines. This is especially the case with heavy goods, in many of which the state of the raw material has recently added largely to their cost. Difficulty in obtaining the material has also contributed much to the upward tendency. In miscellaneous Shelf Hardware, in which the price of iron or steel is a matter of less importance, firmness has been given to quotations by the gradual advances which have been taking place in wages. With the continuance of prosperous conditions throughout the country the wage earners, even where there has been no concerted movement, are asking increase in wages, and in many cases the manufacturers have yielded to their demands, which have had added force from the difficulty which is experienced in getting skilled labor in many lines. The large demand on manufacturers, almost all of whom are running to their full capacity, is an influence which keeps the market firm and strong. This is a season at which the demands from the large houses naturally relax, as stock orders covering their principal requirements for the season were placed some time ago, and consequently there is only a moderate volume of new business coming in from this class of trade. Their sales, however, have been so large that many of them are finding it necessary to replenish stocks, and their supplementary orders represent a considerable volume of business. The large retail trade, whose business is valued by manufacturers, are buying liberally, as business in almost all sections is in excellent condition. The difficulty of getting



goods is the cause of some inconvenience to merchants, as there are a number of lines in which a decided scarcity has developed. The first quarter of the year has ended, having made a great record, both in volume and in the general profitableness of business.

### Chicago.

(By Telegraph.)

Scarcity in a number of lines is now causing considerable annoyance in the Hardware trade. It is not as serious as at certain times last spring, but, as some put it, it is perhaps because the season has not advanced far enough. The shortage is felt in Screen Doors, Poultry Netting, Wire Cloth, Wire Fencing, and even in such articles as Strap and T Hinges. The volume of business is running much in excess of that of the corresponding time last spring. The jobbing houses are working to their capacity, and packing forces are kept busy at night in trying to get the day's business completed. Orders are usually large, the rule being a number of pages instead of part of a sheet, as was the case not so long since. It is stated that with most buyers the pressing question is to get the goods and not the price asked for them. The outlook is still extremely encouraging, and the strong demand is expected to continue through the spring months. Heavy Hardware jobbers report the month of March, just ended, the largest in their experience. The demand for their specialties continues unabated. Chicago houses in this line report their stocks drawn upon to meet the requirements of buyers as far East as Pennsylvania. Iron and Steel products shipped here from Pittsburgh mills are often returning to buyers in the same vicinity.

### St. Louis.

(By Telegraph.)

The month of March is referred to as being a period of large sales, and since the advent of the mild weather which has prevailed in many parts business has shown a broadening tendency. All seasonable lines are in strong demand, and the movement is noticeably heavy in all Wire products. Difficulty in securing a full supply of Screen Cloth and Poultry Netting is heard in some quarters, but this is not a new feature. Shelf goods are moving in large volume, and reports come in from many points of active building operations in progress or in contemplation. The generally prosperous conditions extend into the heavy department of the market, in which the demand is said to be satisfactory.

### Cleveland.

THE W. BINGHAM COMPANY.—Business is coming our way in greater volume than ever before at this time of the year, and it is not confined to any particular line of goods, but seems to run all through the stock, particularly Tools, House Furnishing Goods, Builders' Supplies, Mining and Milling Supplies, indicating that people are busy all over the country. We have been handicapped somewhat of late on shipments of Nails and Wire from the mill in car lots, on account of the inability of the railroads to furnish cars promptly to transport same. We have, however, been able to accumulate a good stock of this line of goods, and are serving our customers promptly on shipments from our stock.

Everything points to an early spring opening, and the trade are clamoring for goods that they bought early in the season for March, April and May shipment. There is a specially loud call for Steel Goods, Lawn Mowers, Wire Cloth, Netting, Shovels and Spades; in fact, the dealers are anticipating their wants a month ahead of the usual time. The reason is that spring goods were sold very cheap, and the trade are not afraid to take them in at the prices they bought at.

The indications are that the month of March will end up in a larger amount of business than was ever known from this district before, and our advice to the trade is to take their present and future goods in stock as fast as possible, so as to be supplied when the consuming trade want them.

It is certainly wonderful to see the amount of goods that is being consumed throughout our land at the pres-

ent time. There is no overstock to speak of in the hands of the jobber or the retailer, and the trade in this district is in a very healthy condition.

### Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade during the last two weeks has been exceedingly good in practically all branches of Hardware. Leading goods have been especially active. There is already great and there will be greater scarcity of all kinds of Agricultural Implements, Hoes, Forks, Rakes, &c. In fact on Cotton and Planters' Hoes factories are weeks behind their orders without any apparent prospect of catching up even before the season on these goods ends. There is also a scarcity of Shovels and Spades.

Manufacturers of Lawn Mowers never had such a season, and orders are placed practically up to the full capacity of the works with most of the manufacturers.

Orders for Wire Nails are very heavy, and factories quite behind on shipments. The market is therefore more firm on Wire Nails and Barbed Wire than it has been at any time for the last six months.

The mild weather at this writing appears to have stimulated purchasers, and the salesmen are generally sending in satisfactory orders.

### Baltimore.

CARLIN & FULTON.—The improvement in weather conditions since our last letter has been followed by improved business conditions, the one being very much dependent upon the other. The demand from the agricultural sections of our market is now great for all articles needed for the preparation for the next season's crops, while Tools of every description for all outdoor labor are also in great demand.

Business has been greatly hampered by the lack of transportation facilities and the delay in obtaining from the vicinity of Pittsburgh heavy staples such as Nails and Wire.

The advances in the market have also stimulated orders, and inasmuch as every one is confident of the stability of prices with the prospect of higher quotations, there is less risk in entering orders for future shipment than when conditions were different.

In our Southern market the short cotton crop of last season has been a great drawback to business, but the recuperative powers of that section have been shown so frequently in former years that we have no fears for the future.

### Omaha.

LEE-GLASS-ANDRESEN HARDWARE COMPANY.—The two weeks just closed have not been productive of any new or interesting features. As we have noted for some time past, the movement of all kinds of Hardware from this market has been extremely heavy, and with the change to warm and springlike weather it is expected that the volume of business will still further be increased. The outlook for spring and summer business still retains its flattering aspect.

It would be difficult to find a period in the history of this section of the country when the general feeling was as good among the mercantile community as it is now, nor was there ever a time when so few complaints were heard.

### New Orleans.

A. BALDWIN & Co.—Business is somewhat quiet in the sugar section, owing to the present tariff legislation, but in all other sections it shows an improvement even over last year, when the volume of business was exceptionally heavy. The Builders' Hardware line shows considerable improvement.

Scarcity in some of the seasonable goods, such as Wire Cloth and Poultry Netting, is being felt seriously.

### Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—With clearings showing an increase last week of 60 per cent. over corresponding week one year ago, and immigration pouring into Oregon and Washington in numbers never before equaled, one train in five sections carrying 3000 passing one gateway in 24 hours, things "look good to

us." A foreign steamer in port that carried 4,000,000 feet of lumber hence, the largest single cargo of lumber ever floated, and now to take 2,000,000 feet of lumber and 2000 tons of flour to the Orient, shows in part volume of exports in that direction. Wheat acreage larger than last year and with prospects of a bumper crop. Hop contracts for new crop at 12 cents per pound, enabling growers to make 100 per cent. profit. Wool men in the field inquiring for clip not yet sheared. Lumber mills running day and night, far behind orders.

Trade is good, of course, and prospects better.

### NOTES ON PRICES.

**Wire Nails.**—The Wire Nail market is characterized by the activity which has prevailed for some time, and the mills are unable to ship goods nearly as fast as the trade desire. Transportation difficulties accentuate this feature, and there is no sign of an immediate change in this regard. The wisdom of the Wire Nail manufacturers in refraining from making an advance last week is generally recognized. The conservative policy in avoiding unnecessarily high prices will undoubtedly contribute to the maintenance of present satisfactory and prosperous conditions. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.05
To jobbers in less than carload lots.....	2.10
To retailers in carload lots.....	2.10
To retailers in less than carload lots.....	2.20

The differentials between jobbers and retailers and also between carload and less than carload lots are not always observed by outside mills, but the condition of the market is such that the prices as given above represent actual transactions more closely than is frequently the case.

**New York.**—There is little reason for complaint in regard to the local trade. Merchants experience a good deal of inconvenience on account of difficulty in obtaining Nails as fast as the trade absorb them and stocks generally are broken. The market has a decidedly firm tone, and is represented by the following quotations: Small lots from store, \$2.25 to \$2.30; carloads on dock, \$2.18 to \$2.20.

**Chicago, by Telegraph.**—While rumors have been circulated that an advance would be made the 1st inst., prices continue unchanged. Manufacturers report a flood of specifications which keeps them running to their utmost capacity. New business is also coming forward quite freely and the prospects are bright for a continuation of good trade. The factories are somewhat in arrears on shipments, but as yet the delay in deliveries is not serious. Jobbers report their trade quite large. Prices are unchanged at \$2.20 for single carload lots and \$2.25 to \$2.30 for small lots.

**St. Louis, by Telegraph.**—The inquiry and demand for Wire Nails continues to be very heavy and prices hold uniformly firm. Small lots from store are quoted at \$2.30.

**Pittsburgh.**—No change was made in prices of Wire Nails at the meeting held in Chicago March 27. Manufacturers report a very heavy demand, buyers having placed large orders prior to the advance in prices, and shipments on these contracts are now going forward. The scarcity of cars and also of Steel is still interfering with shipments of Wire Nails, and some sizes are difficult to obtain promptly. We quote Wire Nails at \$2.05 in carloads and \$2.10 in small lots, f.o.b. maker's mill.

**Cut Nails.**—The demand for Cut Nails is of such volume that the mills find difficulty in supplying it at all promptly. Most of them are delayed somewhat in their shipments on account of having only broken assortments in their warehouses. An advance of 5 cents per keg in price was made for April at the meeting yesterday. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....	\$2.05
Less than carload lots.....	2.10

**New York.**—There is, perhaps, on the whole an increased demand for Cut Nails as compared with Wire Nails, notwithstanding the fact that there is so little difference in price. The volume of business in the territory directly tributary to New York is regarded as very satisfactory and indicating a good condition of general business. The advance of 5 cents per keg for April makes New York quotations for carloads and less than carload lots as follows:

Carload lots on dock.....	\$2.18
Less than carload lots on dock.....	2.23
Small lots from store.....	2.30

**Chicago, by Telegraph.**—The demand is fair and prices are nominally a trifle higher, small lots from stock being quoted at \$2.25.

**St. Louis, by Telegraph.**—The trade in Cut Nails continues fair and the quotation for small lots from store is \$2.30.

**Pittsburgh.**—A meeting of the Cut Nail Manufacturers' Association is to be held to-day, Tuesday, to fix prices of Cut Nails for April shipment. An advance is not improbable.

**Barb Wire.**—The Barb Wire market has a decidedly strong tone, although no advance has been made in price. The mills are crowded with orders and are necessarily somewhat slow in making deliveries. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted	Galv.
To jobbers in carload lots.....	\$2.60	\$2.90
To jobbers in less than carloads.....	2.65	2.95
To retailers in carload lots.....	2.70	3.00
To retailers in less than carloads.....	2.80	3.10

**Chicago, by Telegraph.**—Although it had been supposed that the increase in manufacturing capacity would enable the factories to keep the trade supplied, the demand is so much beyond expectations that prompt shipments cannot be made on all orders. This is specially the case with Baker Wire and other particularly favored brands. Manufacturers are obliged to divide their output among their customers, in the endeavor to keep all of them reasonably satisfied. Jobbers in this vicinity are having a heavy trade, which promises to increase. Prices are unchanged at \$2.80 for Painted and \$3.10 for Galvanized, in single carload lots, with 5 cents extra for small lots.

**St. Louis, by Telegraph.**—Jobbers report a very large volume of business in the market for Barb Wire. The quotation in small lots is \$2.90 for Painted and \$3.20 for Galvanized.

**Pittsburgh.**—The volume of business is large and the product of the mills is taken by the trade as fast as made. The tone of the market is firm and we quote as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days: Painted, \$2.60; Galvanized, \$2.90; less than carload lots, Painted, \$2.65; Galvanized, \$2.95.

**Plain Wire.**—No change having been made at the meeting of manufacturers which was held in Chicago March 27, quotations remain as before. The volume of current business is very large and merchants in many cases are clamoring for deliveries on orders placed some time ago. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

Base sizes.	Plain.	Galv.
To jobbers in carload lots.....	\$2.00	\$2.40
To jobbers in less than carload lots.....	2.05	2.45
To retailers in carload lots.....	2.05	2.45
To retailers in less than carload lots.....	2.15	2.60

The above prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

6 to 9.....	Base.....	\$0.40 extra
10.....	\$0.05 advance over base.....	.40 "
11.....	.10 " " " ".....	.40 "
12 and 12½..	.15 " " " ".....	.40 "
13.....	.25 " " " ".....	.40 "
14.....	.35 " " " ".....	.40 "
15.....	.45 " " " ".....	.75 "
16.....	.55 " " " ".....	.75 "
17.....	.70 " " " ".....	1.00 "
18.....	.85 " " " ".....	1.00 "



For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

*Chicago, by Telegraph.*—The demand is in excess of the volume of business last spring. Small lots from stock are held at \$2.20.

*St. Louis, by Telegraph.*—Plain Wire is in very large demand and jobbers continue to quote No. 9 at \$2.25 and Galvanized at \$2.65, with the usual advance for other sizes.

*Pittsburgh.*—No change was made in prices of Plain Wire at the meeting in Chicago on March 27. There is a heavy demand, and prices are very strong. We quote Plain Wire at \$2, and Galvanized at \$2.40, in carloads, f.o.b. Pittsburgh, usual terms. For small lots advances on these prices are charged.

**Carriage Springs.**—On account of the advance in steel the manufacturers of Wagon and Carriage Springs have made an advance of  $\frac{1}{4}$  cent per pound in the prices of these goods. The market is very firm, and the demand of the trade is such that the manufacturers have difficulty in filling orders as promptly as their customers desire.

**Carpet Sweepers.**—National Sweeper Company, Marion, Ind., announce the following prices on their line of Carpet Sweepers, a reference to which is made in another column:

Marion Roller Bearing, full Nickeled Trimmings...	\$24.00
Marion Queen Roller Bearing, Regular Finishes, full Nickeled Trimmings.....	24.00
Monarch Roller Bearing, Nickeled Trimmings....	22.00
Monarch Roller Bearing, Japanned Trimmings....	20.00
Marion Queen Roller Bearing, Fancy Veneers, full Nickeled Trimmings.....	27.00
Transparent Roller Bearing, Beveled Plate Glass Top, Nickeled Trimmings.....	27.00
Monarch Extra Roller Bearing (17-inch case), Nickeled Trimmings.....	36.00
Monarch Extra Roller Bearings (17-inch case), Japanned Trimmings.....	33.00
Perpetual, Regular Bearings, Nickeled Trimmings.	20.00
Perpetual, Regular Bearings, Japanned Trimmings.	18.00

From the above prices a discount of 50 cents per dozen is made on three-dozen lots and a discount of \$1 per dozen on five-dozen lots. An easel holding three Sweepers will be furnished free with first half-dozen order, and a nickel plated display stand holding six Sweepers with the first order for one dozen or more.

**Mason Hammers, &c.**—Advanced list prices have been adopted by the manufacturers on Mason Hammers and Sorting Hammers. The new prices are represented by the following circular, which has been issued by Fayette R. Plumb, Philadelphia:

Mason Hammers, No. 970:	Per pound.
Under 3 pounds.....	60c.
3 to 5 pounds.....	55c.
5 pounds and above.....	50c.
Mason Hammers with Teeth, No. 980:	
Under 3 pounds.....	65c.
3 to 5 pounds.....	60c.
5 pounds and above.....	55c.
Sorting Hammers, No. 990:	
$1\frac{1}{4}$ to $2\frac{1}{4}$ pounds, inclusive.....	65c.

**Glass.**—A meeting of the Jobbers' Association and the combined Glass manufacturers has been arranged to be held in New York, April 8, at which time it is expected that the Jobbers' Association will place an order for Glass. The advance in price likely to be made at this time by the manufacturers is alluded to as probably being from 5 to 10 per cent. There is a difference of opinion regarding the future of the Glass market. It is claimed by some that stocks in manufacturers' hands are not as large as is generally supposed, and that prices will be higher before the factories start up in the fall. Others are of the opinion that future prices will depend upon how much Glass the Independent Glass Company have uncontracted for when the factories close for the summer. The company claim, it is stated, that they will close this fire with a stock large enough to enable them to control prices until September 1. The activity in building operations all over the country would indicate a large demand for Glass later in the season.

The following are the quotations of the Jobbers' Association:

From store.....	Discount.
F.o.b. factory, carload lots:	.95 and 5 %
Single strength.....	.90 and 10 and $7\frac{1}{2}$ %
Double strength.....	.90 and 10 and 10 %

**Paints and Colors.**—*Leads.*—The demand for White Lead in Oil has been very satisfactory, and continues to be so. The prospects are for an extended use of painting materials of all kinds during the coming season. Quotations are as follows: In lots of 500 pounds or over, 6 cents; in lots of less than 500 pounds,  $6\frac{1}{2}$  cents per pound.

**Oils.**—*Linseed Oil.*—The demand for Linseed Oil has shown some improvement during the week for immediate shipment. Less is heard of a possible advance in prices in the immediate future, as some crushers are offering Oil for delivery up to August on the 62-cent basis in large quantities. Quotations are without change, as follows, according to quantity: City Raw, 63 to 64 cents; out of town Raw, 62 to 63 cents per gallon.

**Spirits Turpentine.**—On March 31 the price of Turpentine at Savannah dropped 8 cents per gallon. On March 29 the nominal price was 53 cents and on the 31st ult. the market opened at 45 cents per gallon. Sales had been made during the week previous at from 4 to 7 cents below the nominal quotations, and on April 1  $43\frac{1}{2}$  cents, it is reported, was bid for April deliveries, and as it was generally believed that the market had been manipulated, the demand was not large. For the past week the local market has been unable to determine the actual values in the Southern market and local quotations, as the result, have varied greatly. The decline has been of value to the New York market in determining the real value of Turpentine. The local market is now steady at the following quotations, according to quantity: Southern,  $48\frac{1}{2}$  to 49 cents; machine made barrels, 49 to  $49\frac{1}{2}$  cents per gallon.

## PROGRESS TOWARD JOBBING CONSOLIDATION.

THE trade is full of rumors in regard to the consolidation of jobbing interests. The names of several houses are mentioned from time to time in the daily press as having been taken in, but in all cases they refuse to confirm or deny the report. Many houses interested in the matter are now in New York, and the impression is given out that the movement will be consummated in the near future. The name by which the aggregation will be known has apparently not been finally determined. This relatively simple matter is said to be receiving attention to-day in connection with many details of the project. While it is impossible to forecast the outcome of pending negotiations, the absolute confidence expressed by those identified with the movement and those in closest touch with it, that it will be successfully consummated, is the most striking feature of the situation. It is not unlikely that developments will be such as to enable us to make a more definite statement in regard to the matter in our next issue.

C. A. Watson has succeeded A. Watson & Son, at Sheridan, Mo., dealers in Hardware, Stoves, Farm Implements, Sporting Goods, Paints, Buggies, furniture, wall paper, &c. The new proprietor will make some improvements in the establishment, including additional shelving and fixtures, although the store is referred to as already one of the most complete and best arranged in Worth County.

At the recent annual meeting of the Edwards & Chamberlin Hardware Company, Kalamazoo, Mich., the following officers were elected: C. M. Chamberlin, president; H. B. Peck, vice-president; W. D. Edwards, secretary, and A. K. Edwards, treasurer. The capital stock of the company was increased from \$40,000 to \$75,000.

## BANQUET OF THE NEW YORK AND NEW JERSEY HARDWARE AND IRON ASSOCIATION.

**T**HE New York and New Jersey Hardware and Iron Association, which includes in its membership most of the important houses dealing in Carriage and Wagon Materials and Accessories in Greater New York and nearby New Jersey cities, had their third annual banquet at Muschenheim's Arena, New York, Thursday evening, March 27. Covers were laid for 20, all but one being present. After a fine dinner, well served, during which there were frequent numbers of an instrumental programme, the toastmaster, William E. Kleine, who also presided in the unavoidable absence of Walter T. Crane, president, after a few introductory remarks called on the various active and associate members and guests for remarks, which were of a purely informal character. The utmost good feeling prevailed, and the addresses made by members and manufacturers emphasized the tangible and appreciable benefits accruing to members of the organization as a result of the conservative methods followed in carrying out the aims of the association. Those who are members and have realized the practical benefits resulting from welding together in this way the various concerns doing business in this territory, feel sure that if two or three of the concerns not yet affiliated with the association should become connected with it the efficiency of the movement would be further increased. The aims of the association, which was organized in the early spring of 1899, is the maintenance of prices on a reasonable level, the prevention of unnecessary cutting with resultant demoralization and the improvement of the credit system, the social side merely serving to acquaint members with each other. Among those present were William E. Kleine, who presided; Joseph Ruppert, the vice-president; Emil Rudolph, treasurer; Henry Bodevin, secretary; Albert Ruppert, M. Elsig, Phillip J. Langer, Charles Ruwe, Harry Ruwe, and Ralph Tiebout of the active membership. The associate members and guests present included C. W. Schluchter of F. W. Wurster & Co., Brooklyn; E. S. Darlington of Hoopes Bros. & Darlington, West Chester, Pa.; W. R. Kugler and Mr. Lauer of the Lambertville Spoke Mfg. Company, Lambertville, N. J.; Thomas H. Rose, Livingston Nail Company, New York; R. B. M. Cook, Russell, Burdsall & Ward Bolt & Nut Company, Port Chester, N. Y.; L. B. Morris, Cambria Steel Company, and William C. Merrell of E. R. Merrell Spring Company, 530-532 West Twenty-eighth street, New York.

Other members of the association are the W. T. Crane Carriage Hardware Company, Newark, N. J.; John C. Bonn, H. F. Gundrum and G. H. Kennedy & Co., all of New York; Charles Scott & Co., Philadelphia, Pa.; D. Delaney & Son, Newark, N. J., and I. & J. Laforge, Rahway, N. J.

## HARDWARE DEALERS' CREDIT ASSOCIATION.

**A**N association has recently been formed in Boise, Idaho, which is known as the Hardware Dealers' Credit Association. Its membership comprises all the strictly Hardware stores of the city—that is, those with whom Hardware is the leading line. J. K. Loree of the Loree & Swain Hardware Company is president and E. J. Phelps of the Idaho Hardware & Plumbing Company is secretary.

This association, as its name indicates, has been organized primarily for the purpose of preventing abuse of credit. The association has prepared a "black list," and no person on that list can secure credit at any Hardware store in the city, unless it be for goods going into the construction of a building, such as Builders' Hardware, Plumbing Supplies, Paints and the like, in which case the members are privileged to extend credit, as the laws of Idaho protect merchants in such cases, the goods forming a lien upon the building until paid for.

We understand that while the organization has been in existence but a short time, considerable good has resulted. It has made possible the collection of some bad

debts and has certainly prevented the members from making some new ones. It will also exert an influence on some people naturally careless as to their credit and make them more careful and induce more prompt payments of accounts. Being a newly opened country and just in process of development, the merchants in Idaho are often obliged to extend more liberal credit than their Eastern brethren. Very often they are compelled to take a chance, though, of course, they try to secure themselves as much as possible.

It is expected that the association will be gradually extended to all the towns situated near the capital city, and ultimately it may develop into a State association, with additional aims and purposes. At the present time, however, it is designed merely to assist in the regulation of credits.

## GOODELL COMPANY'S NEW CATALOGUE.

**T**HE GOODELL COMPANY, Granite State Cutlery Works, Antrim, N. H., and 10 Warren street, New York, have just issued a comprehensive illustrated catalogue of their Table Cutlery, Carvers, Butcher Knives, Hunting, Sticking, Skinning, Shoe, Cigar, Putty, Bread, Cheese, Steak and various other kinds of Knives made by them. There are changes in the methods of listing the goods, new patterns in Table Cutlery have been added and the line of Carving Sets has been largely extended, particularly in Sterling mounted goods. Some new shapes and sizes of Butcher Knives have likewise been added. To facilitate ordering a cipher code covering four pages is given at the back of the book.

## HARRINGTON CUTLERY COMPANY.

**T**HE Knife manufacturing business of Dexter Harrington & Son, Southbridge, Mass., is about to be incorporated under the style of Harrington Cutlery Company, with the following officers: Dexter Harrington, president; Charles D. Harrington, treasurer and clerk; Dexter Harrington, George W. Wells and Charles D. Harrington, directors. The capital stock of the new corporation is \$30,000. It is the intention of the new corporation to build a modern plant in every particular for the manufacture of an extensive line of Cutlery Goods.

WILLIAM R. GRAEF of Graef & Schmidt, 107 Chambers street, New York, was a passenger on the last trip of the steamer "Deutschland" to the other side, he making a business trip abroad annually in the interest of the house. He is expected back in August or September in ample time for the fall trade. A feature of this trip will be the bringing out of some entirely new patterns and designs of fine Scissors and Manicure Goods in sets of exceptionally elegant character in fine examples of leather cases. The goods will be the production of J. A. Henckels, Solingen, Germany, for whom Graef & Schmidt are sole representatives in the United States and Canada.

FIRE destroyed the establishment of the George de B. Keim Saddlery Company, 610 and 612 Market street, Philadelphia, Pa., on the 31st ult.; damage estimated at \$150,000, partially insured. The adjoining properties suffered damage by water. Edward L. Hand & Co., occupying 916 Market street, selling agents for Jessop & Sons, Limited, Sheffield steel, were considerably inconvenienced by water; their loss, however, will not affect the regular conduct of business and is fully covered by insurance.

OSBORNE & STEVENSON, Plainville, Conn., who have for the past few years carried on the manufacture of small Hardware Specialties, will erect a new factory building, two stories high, 45 x 70 feet. Mr. Stevenson is the superintendent of the E. N. Welch Clock Mfg. Company of Forestville, and his partner, Mr. Osborne, is associated with J. Hart Welch in the clock trade in New York City.



## Pennsylvania Retail Hardware Dealers' Association.

**T**HE first annual meeting of the Pennsylvania Retail Hardware Dealers' Association was held at the Monongahela House, Pittsburgh, on the 26th and 27th ult. Nearly 50 firms were represented, including new members. Following is a list of the members of the association prior to the meeting:

J. P. Slotterbeck & Son, Fayette City.	Scheil & Penberthy, Monessen.
W. A. Buckholdt, Charleroi.	Reid Bros., Braddock.
John H. Coulter, Brownsville.	J. F. Frye, Charleroi.
Albert M. Gregg, Monongahela.	Wilson Hardware Company, Belle Vernon.
A. Q. Casselberry, E. End, Pittsburgh.	C. O. Shroyer, Dawson.
H. T. Robinson, Charleroi.	C. N. Savage, California.
J. H. Bowers, Charleroi.	E. Hare & Son, Fayette City.
Fulton & Maggini, Braddock.	E. M. Mardoff & Co., Brownsville.
T. C. McCurdy, Monongahela.	Digby & Smith, McKee's Rocks.
Greensburg Hardware Company, Greensburg.	L. C. Fox, Irwin.
M. G. Spragg & Son, Donora.	Geo. J. Rudolph, 113 Smithfield street, Pittsburgh.
E. H. Darsie, Donora.	Geo. L. Moore, Brownsville.
J. B. Holderbaum, Somerset.	Gunn Tool & Supply Company, Pittsburgh.
Kirk & Smith Company, New Castle.	L. F. Kellerman, McKee's Rocks.
P. J. Cover & Son, Meyersdale.	
Dickson & Co., New Castle.	
Shipley Hardware Company, Meyersdale.	

Following is a list of houses who were elected to membership during the meeting:

T. L. Berkey, Bollivar.	John Steuler, Millvale.
Samuel McKnight, Allegheny.	John T. Howe, Freedom.
Taylor Hardware Company, Allegheny.	Geo. W. Rowbottom, Allegheny.
Geo. W. Hackett, Allegheny.	E. D. Everts, Corydon.
Thompson & Co., Mt. Jewett.	C. W. Krissenger & Co., Berlin.
S. S. Bryan, Titusville.	John S. McKean & Sons, New Kensington.
Samuel Munnell, Canonsburg.	F. H. Bidaux, Titusville.
C. H. Miller Hardware Company, Huntingdon.	
Kline & Co., Williamsport.	

The meeting was called to order by Geo. L. Moore, president, at 11 o'clock on Wednesday morning. A. C.

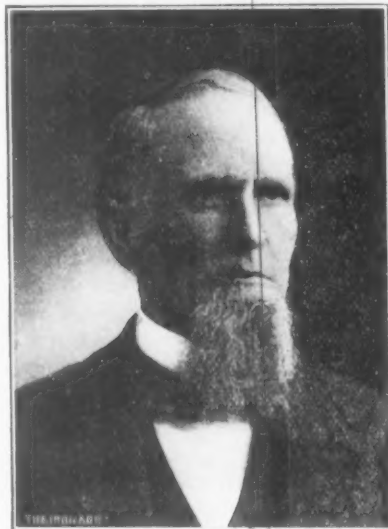
association was not organized for the purpose of fighting, but for coming together on many vexing questions. One of the members complained that the jobbers were not protecting the retail trade, and expressed a desire to have this point taken up and discussed.

The president appointed the following committees:

PRESS: R. R. Williams, Mr. Dickson, J. T. McKean.  
RESOLUTIONS: M. L. Corey, E. D. Everts, Geo. V. Thompson.

### Entertainment Committee.

The Entertainment Committee in charge of the meeting consisted of J. E. Digby, McKee's Rocks; H. F. Rob-



GEORGE L. MOORE, President.



Robertson, representing J. O. Brown, City Recorder, welcomed the association, President Moore responding with appropriate remarks.

Addresses followed by Mr. McMurray of the J. C. Lindsay Hardware Company, Mr. Lloyd of the Bindley Hardware Company, Mr. Logan of Logan-Gregg Hardware Company, Chas. G. Grubbs of Peters Cartridge Company, and R. R. Williams, Hardware editor of *The Iron Age*, in which the speakers expressed their sympathy with the work of the association.

As this was an open session and participated in by jobbers and manufacturers, of whom there were a number present, M. L. Corey, secretary-treasurer of the National Retail Hardware Dealers' Association, who was present by invitation, took the occasion to explain that the Pennsylvania

association was not organized for the purpose of fighting, but for coming together on many vexing questions. One of the members complained that the jobbers were not protecting the retail trade, and expressed a desire to have this point taken up and discussed.

### Constitution and By-Laws.

A. Q. Casselberry, Pittsburgh, chairman of the Committee on Constitution and By-Laws, made a report, which, after some minor changes, was adopted as follows:

#### PREAMBLE.

We have long recognized the fact that a closer relation must exist between the wholesaler and retailer, and that each have rights and equities which should be respected, thereby bringing beneficial results to the legitimate Hardware business.

We as retailers cannot exist if we are forced to come into direct competition with the wholesaler. At the same time we desire it to be distinctly understood that it is not the object of this association to form any trust or combination which would act as a burden to the consumers, and it is not intended to encourage the schemes of any private individual, firm or corporation, but to consider and act upon all matters pertaining to the general welfare of the trade; it is the purpose of this association to furnish such protection so far as is possible. As such protection is only obtainable through the medium of a large and interested membership, we earnestly invite the attention of all dealers who are not members, to the end that they may see the necessity of joining their influence to ours in this work; therefore, be it

*Resolved*, That purchases should be confined to loyal manufacturers and jobbers.

*Whereas*, Some manufacturers and jobbers in general Hardware, Agricultural Implements, Stoves, Tinware, Paints, Leads, Oils, Varnishes and kindred lines pertaining to the Hardware business persist in selling their lines through illegitimate channels, placing us toward our customers in the light of extortioners and causing a general demoralization in the retail Hardware trade; therefore, be it

*Resolved*, That the members of this association confine the purchase of Agricultural Implements, Hardware, Stoves, Tinware, Paints, Leads, Oils, Varnishes and kindred lines pertaining to the Hardware business to manufacturers and jobbers who sell goods to firms that are regularly engaged in the retail Hardware business as defined in these resolutions.

*Resolved*, That it is the sense of this association that the interpretation of the term "Retail Hardware Dealer," as set forth in the above resolution, to entitle him to purchase Agricultural Implements, Hardware, Stoves, Tinware, Paints, Leads, Oils, Varnishes and kindred lines, be construed to mean any person or persons having an established place of business and carrying a line of Agricultural Implements, Hardware, Stoves, Tinware, Paints, Leads, Oils, Varnishes and such goods as are usually kept in a first-class hardware store.

*Resolved*, That it is not the intention of the above resolution to prevent the interchange of goods mentioned between manufacturers and wholesale dealers in such goods, when such interchange is not detrimental to the interests of the retail hardware dealers, and that the further interpretation of these resolutions is hereby vested in the Executive Committee, with power.

*Resolved*, That any manufacturer or jobber in Hardware,

that purpose, make and keep a correct account of all fees and dues received and all amounts paid out; shall, with the president, sign all certificates of membership; shall report the standing of his office when called upon to do so by the Executive Committee, and shall perform such other duties as pertain to his office.

Sec. 5. The Executive Committee may pay the secretary-treasurer such salary as may be deemed necessary.

Sec. 6. Any vacancies occurring in office during the year, by death or otherwise, shall be filled by the Executive Committee.

#### ARTICLE V.

Section 1. The annual meeting of this association shall be held in February, at a date to be set by the Executive Committee, the place to be selected at each convention.

Sec. 2. The order of business shall be:

1. Roll call of members.
2. Reading of minutes of last regular and called meetings.
3. Report of committees.
4. Report of secretary-treasurer.
5. New or unfinished business.
6. Propositions for the good of the association.
7. Adjournment.

#### ARTICLE VI.

Amendments to the constitution may be made at any regular meeting of the association by the vote of at least two-thirds of the members present. Ten days' notice shall be given to members of any proposed change in the constitution or by-laws.

#### ARTICLE VII.

An Auditing Committee of three shall be appointed the first day of each annual meeting, which shall examine the books of the secretary-treasurer and report their condition to the association.

#### BY-LAWS.

Section 1. The Executive Committee shall meet at least once each year, besides the time of the annual meeting, and oftener if so requested by the president.

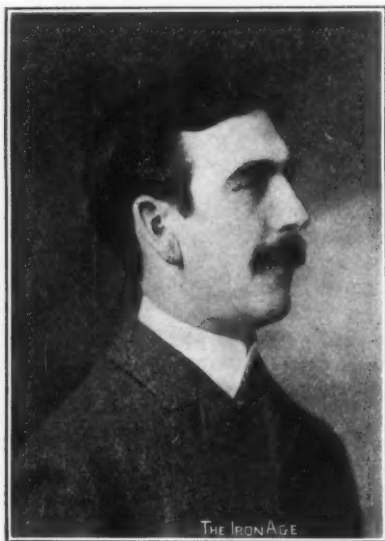
Sec. 2. The admission fee to membership shall be \$4 in advance, which fee shall cover all dues until the next annual meeting. The annual dues shall be \$4, payable at such regular meeting.

Sec. 3. All fees and dues must be paid before a member can be recognized as a member or become entitled to act in the association.

Sec. 4. Any member may delegate, in case of unavoidable absence, a representative, who must be a member or an employee of said firm or corporation, to represent them at any meeting of the association, who shall present written credentials of the firm or corporation he represents.

Sec. 5. Each firm shall be entitled to one vote.

Sec. 6. Any session of this association shall be "executive"



B. A. MAGGINI, Treasurer.

Agricultural Implements, Stoves, Furnaces, Paints, Leads, Oils, Varnishes and kindred lines, selling or furnishing net prices or discount from list-prices, contrary to the foregoing resolutions, either by themselves, employees or agents, shall be considered as disapproving the above resolutions.

*Resolved*, That this association, as far as lies in its power, shall keep a record of all goods sold, and by whom sold, through illegitimate channels, and of all other violations of these resolutions.

*Resolved*, That every member of this association is constituted a committee of one and is expected to report to the proper officer any violation of these resolutions.

*Resolved*, That the Executive Committee be and is hereby instructed to have prepared a list of such manufacturers and jobbers who are and who are not in sympathy with the efforts of our organization and that the same be sent to our list of members, who will be expected to be guided thereby in the matter of purchases thereafter.

#### CONSTITUTION.

##### ARTICLE I.

Section 1. The name of this organization shall be the Pennsylvania Retail Hardware Dealers' Association.

Sec. 2. The object of this association shall be to promote the welfare of the retail hardware trade in Pennsylvania and create among its members confidence in each other.

##### ARTICLE II.

Any person or firm engaged in the retail hardware business in good standing and carrying a general assortment of stock may become a member of this association by subscribing to the constitution and paying the annual dues prescribed by the by-laws.

##### ARTICLE III.

Section 1. The officers shall consist of a president, a vice-president and a secretary-treasurer, the president, secretary-treasurer and three other members of the association constituting the Executive Committee.

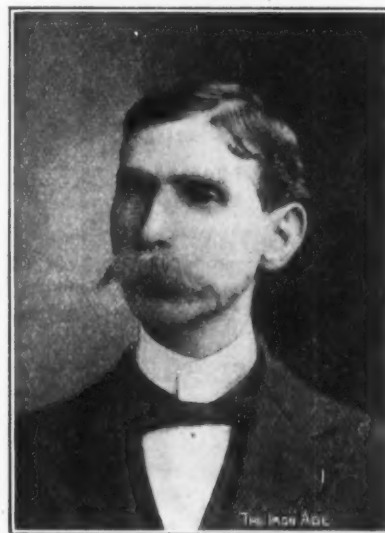
##### ARTICLE IV.

Section 1. The president, vice-president and secretary-treasurer, after the adoption of this constitution, shall be elected for one year.

Sec. 2. It shall be the duty of the president to preside over all regular and called meetings, to exercise supervisory control over the affairs of the association, to carry out and enforce all measures adopted by the association.

Sec. 3. It shall be the duty of the vice-president to officiate for the president in his absence or disability.

Sec. 4. It shall be the duty of the secretary to keep a record of all the meetings of the association or the Executive Committee, conduct all correspondence, notify all committees of their appointment, keep a list of the members in a book kept for



J. F. FRYE, ex-Secretary.

when so decided by the Executive Committee, to which only *bona fide* members and such other persons as they may designate shall be admitted.

Sec. 7. Any person, firm or corporation can be expelled from membership for cause.

Sec. 8.—Cause of Expulsion.—Non-payment of dues, when members do not work in harmony with the objects and aims of the association, or divulge and make known to outsiders the business affairs of the association.

#### Discussion of Business Methods.

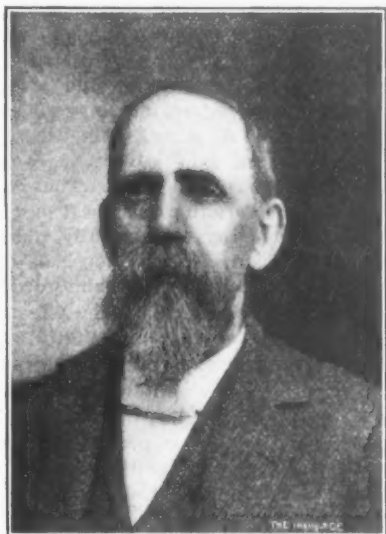
Practical questions in regard to the conduct of business and improvements which might be made in store management received some attention from the convention. Among these was the matter of keeping track of cash handled in the store, and various suggestions



were made by the members as to the prevention of loss through dishonesty or neglect.

#### Executive Sessions.

The executive sessions of the association were held on Wednesday afternoon and Thursday forenoon. At these meetings there was a large attendance of the membership and much interest was evinced in the subjects which came up for discussion. The counsel of M. L. Corey, secretary of the National Association, was of much service. The interest taken by the member-



F. S. MCCURDY.

ship in the work of the association was very marked and promised well for the success and usefulness of the organization.

#### Legislative Committee.

Mr. Bryan of Titusville moved that a committee be appointed to consist of five members, to be known as the Legislative Committee, and to be appointed within four months. The motion was carried.

#### Pittsburgh Chosen.

A motion made by Mr. Miller was also carried that the next annual meeting be held in Pittsburgh.

#### The National Secretary.

M. L. Corey, the efficient secretary of the Indiana State Association and also of the National Association, was present at all of the sessions of the convention. The attention which Mr. Corey has given to the matter of the retail Hardware organization and his wide experience in this field, as he has been brought into close contact with the organization movement in many States, made his advice of special value, and his suggestions carried much weight with the association.

#### Fire Insurance.

The matter of establishing an insurance company with advantages of which the members of the association might avail themselves was earnestly considered at the convention and steps were taken to determine the feasibility of putting this project into effect. Explanations were given of the plans of the National Association in this direction, as well as what is being done by trade organizations in different States. The following committee was appointed to look into the matter and report at the next annual meeting: C. H. Miller, Mr. Thompson and President Moore.

#### Work Before the Association.

The discussions which took place at the executive sessions, as well as the conversations between the members in the lobbies of the hotel, indicated a very general prevalence of conditions adverse to the welfare of the retail merchants. Complaints in regard to interference with their trade by manufacturers and jobbers, who

are in very many places in the habit of selling to consumers, were made by practically all the members of the association. It was recognized that one of the most important things which the association could undertake would be the correction of these abuses. The feeling was prevalent that if this could be accomplished in even a good degree the association would be the means of substantially bettering the position of its members as well as of the trade at large. There was, however, a recognition of the need of conservatism and of a due regard to the rights and interests of the various classes of the trade, so that the association's course may command general approval as reasonable and just, and thus avoid unnecessary and fruitless antagonisms.

#### Necessity of Organization.

Among those present at the convention and taking an active part in its work was S. S. Bryan of Titusville, who read an interesting paper on the "Necessity of Organization." Mr. Bryan's interest in organization work dates back a good many years, as appears by the paper which we give below, and he may be regarded as the pioneer in the movement looking to the formation of a national organization. Mr. Bryan's paper was as follows:

When a man has had a hobby for ten years, and has cited all the arguments in its favor, and that, long ago, it is very difficult before such a gathering as confronts me to-day to say anything new on the necessity of organization, especially when many States have been organized several years and the records of these meetings are so faithfully recorded in our enterprising and painstaking trade journals.

In fact, I feel as if I would be compelled to take the positions of our Presidents and Presidential candidates and other prominent men, when touring the country, and ask the kindly and indulgent news gatherers to withhold from publication every utterance that we make on each occasion.

If, nine years ago, I had gone to sleep and awakened to-day to find the progress and growth of the Retail



S. S. BRYAN.

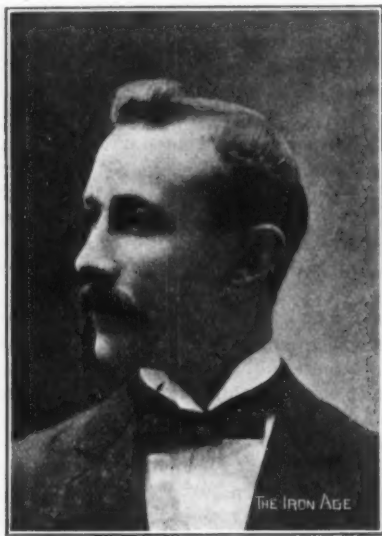
Hardware Dealers' Association, I could not be more surprised than was Rip Van Winkle upon awakening from his 20 years' nap.

It was nine years ago this month that a few Hardware dealers met in Titusville to organize the Retail Hardware Dealers' Association of Pennsylvania, and with this as a nucleus they proceeded to agitate the formation of the United States Retail Hardware Dealers' Association, which was finally effected after much labor in September, 1893. All honor to the men who worked in that cause. The necessity of the organization was as great then as to-day, and had the trade responded to the appeals many of the evils now existing might have been obviated.

## GENERAL APATHY.

Like Galileo of old, these men were ahead of their times, and while they were not persecuted as he was for their enterprise and originality, their efforts met with little or no response, and so the new infant died of that fatal disease so common to infant organization, "General Apathy." And it was not until two years ago that another association was formed, and which, I am happy to say, bids fair to survive the period of adolescence.

But I consider it very bad form to be given a subject and never refer to it. Instead of talking to you on the subject I have been indulging in ancient history. My



H. F. ROBINSON.

subject is "Necessity of Organization," and it seems superfluous to answer this question, but I will venture to do so.

## TROUBLES OF THE RETAILER.

First of all, I will state that the Hardware dealer has a right to exist. In every community he is an upright, honorable man, bearing his share of the burdens of the community, and vitally interested in its upbuilding. His business is one that requires a high order of intelligence. The laborer is worthy of his hire. We do not demand any special privileges from railroads, manufacturers or jobbers, but we do demand to be put on the same basis. When we find that manufacturers and jobbers are selling consumers at exactly the same or even lower prices than we enjoy, it is time something was done to correct this evil. When the jobbing house has one man to call on the dealer and another to call on the factory trade of your town it requires something more than a protest from one lone retail Hardware dealer to remedy this. When your carpenter contractor tells you he can buy his building trim as low as you can, what are you going to do about it? When the village blacksmith, who has been rendered famous in poetry by Longfellow and in art by a distinguished artist whose name escapes me, can buy a well-known brand of Horse Nails direct of the manufacturers through their traveling man at precisely the same discount, that you can, who buy from \$250 to \$1000 per year, do you think such a case hardened sinner can be moved by an appeal from the local Hardware dealer alone and unaided? But let such a complaint be backed up by 7000 retail Hardware dealers throughout the United States, with the alternative of having his goods rejected unless a change occurs in such tactics, and any one here can calculate how long it would take such an unreasonable being to come to terms.

I will not dwell at length upon the various difficulties which beset us on every side. You are all as familiar as I am with the catalogue houses and the department stores, the specialist in Blacksmith and Carriage Makers' Supplies, the supply houses for factories and other parasites too numerous to mention, which are gradually but surely sapping our vitality. To appeal to the law is an absurdity. These merchants are complying with the law

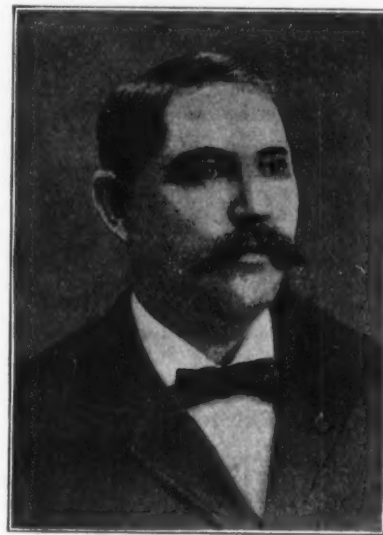
as well as we are. They feel they have as much right to exist as we have. Can you do anything then alone and unaided against a concern doing \$10,000,000 to \$20,000,000 of business a year?

## BUT THERE ARE LOCAL REASONS

which necessitate organization. In your present condition you rarely see your competitor. There is probably no man in your city you meet more rarely. You come to look upon him as your enemy, barring your progress to wealth. If you would meet occasionally and find that he was made of the same flesh and blood and a man of like passions with yourself, you would come to the conclusion that he was a pretty good fellow after all, which feeling would be reciprocated on his part, which, in turn, would lead to discussion, and plans which would be mutually healthy, such as the maintenance of a common price on staples, the early closing of your stores, the refusal of credit to objectionable people, the refusal of the unjust demands of persons soliciting you to subscribe to all manner of fake advertising schemes, and other evils too numerous to mention. These are matters for correction by the forming of a local or county association and having meetings occasionally, but doing most of the work through an efficient corps of officers and Executive Committee. Another reason for forming is, that a safe basis of insurance can be effected such as is in successful operation in several States.

## SUPPORTING THE NATIONAL ASSOCIATION.

Now just a word or two of suggestions based upon experience. Any great end is worthy of a great effort and great sacrifice. Do not expect that all these good results can be accomplished without work or money. Do not delude yourself with the idea that your total dues would be \$1 or \$2 per year. If that is your idea keep your money and pay for an advertisement on the advertising programme of your next local concert. It will do you more good. It takes money to carry on the working of your National Association. Bookkeepers and stenographers will not work for nothing. A brainy, strong man is needed to direct this movement, and it is unreasonable to expect such a man to work without pay. The association would thrive better with a \$2500 man than a \$600 one. The Master Plumbers' Association dues are some \$8 or \$10 per year, and there is no



M. L. COREY.

objection raised on the part of their members, because their organization shows results. We better pay more and get something than pay less and get nothing. We may as well go home now and never come here again unless we support heartily our National Association. It is the sword arm of this movement and without it there would be no power or strength in our organization, but it will be as helpless as the 13 original States after the Revolution and before the formation of the Federal Government and the adoption of our present constitution. In coming here I was not asked to act



as spokesman for the National Association. Perhaps I have stolen another's thunder. If so, I apologize; but so impressed am I with the necessity of maintaining our National Association at the highest point of efficiency that I feel that it is worthy of any sacrifice on our part. And in closing let me say if you ever have a chance to attend a National Association meeting do so. You will meet as intelligent, strong, energetic, honorable gentlemen as it has been your good fortune ever to see. The money you spend will be profitably invested for yourself, for you will get ideas which will do your business good.

I am profiting to-day to the extent of several hundred dollars per year from things I learned from those I met nine years ago in connection with our first State and National movement.

I thank you, gentlemen, for your patience, and will leave to others to tell you what has been and is now being done to benefit the condition of the retail Hardware dealers.

#### Progress.

The following paper on "Progress" was read by A. Q. Casselberry of Pittsburgh:

In civilized countries the desire to advance is nearly



A. Q. CASSELBERRY.

universal; particularly is this true in American commercial life. The marching order of the early Christian Church, "Go ye into all the world," is now lettered, and lettered large, upon the banners of our manufacturers. It is this motive that is banding the retail Hardware dealers together all over the country. It is in this spirit that we are here to-day.

The discussion of progress, relating to the larger plans for the welfare of our infant association, will doubtless be taken up in due order. It is the intention in this brief paper to look into that phase of progress relating to the individual store, an important guide being the

#### INVENTORIES.

There can be no progress without profit, however contradictory may be appearances, and by profit is meant a tangible result. Some dealers think they are making a profit while the inventories from year to year may show increased sales, but no accumulation. Inventories are the milestones on the highway to success. In one of the oldest books of any literature, the Book of Job, are the records of two inventories of the possessions of a dealer in live stock. In one, taken before reverses befell him, is the statement that his substance was 7000 sheep, 3000 camels and 500 yoke of oxen. In the second, taken after he had overcome what in those days represented the competition of catalogue houses, his substance was 14,000 sheep, 6000 camels and 1000

yoke of oxen. These records were evidently not yearly inventories of his business, but in whatever period of time they show what every merchant ought to see, in comparing inventories—a profitable growth.

It is not the purpose of this paper to lay down hard and fast rules showing how to turn a \$10,000 stock ten times a year, for the simple reason the writer doesn't know how to do it, but to invite discussion as to best means to use to determine the rate per cent. of profit; number of times stock should be turned each year to show progress; to determine what effect the rate of profit, added to cost, has upon turning stock; to find out, in short, what increase should be satisfactory. Quoting from a dealer in a town of 1000 population, he says, "I figure on selling nothing less than 33 1-3 per cent. profit." The late Chas. Rouss of Broadway fame advocated 25 per cent., while the time honored Hardware profit has been 50 per cent., a per cent. these days more honored in the breach than in the observance.

Some time ago *The Iron Age* published the yearly sales of a firm celebrating their twenty-fifth year in the Hardware business. This has been of use to me, and perhaps may be to others who keep records of their sales, as in the 25 years there is pretty surely a year that will be near enough to form a starting point for comparison. The entire list will not be given here; any one interested will be provided with a copy. It will suffice to say the first year's sales were \$4321.16; the twenty-fifth year's, \$160,787.92.

#### KEEPING TRACK OF CASH SALES.

A plan is here suggested to enable any one to keep track of cash sales and charges from day to day and year to year.

The various cash registers do not have facilities for recording kinds of goods sold. It is important to keep track of the goods that sell for cash and to push that kind. For this reason if a drawer or register is used a cash sales book is recommended, into which to write sales made. The objection may be made that no one can take the time to write down all sales, and, while it may be admitted that some items may be missed, yet it is surprising how soon it becomes a habit to make the entries. By glancing over this record you know what class of goods are moving for cash. From this book and your regular day book of charges gather once a week the cash sales and charges into a book ruled for that purpose. After the first year this book becomes valuable. If you want to know how one month this year compares with the same month last year a glance gives the information wanted.

#### BETTER BUSINESS METHODS.

If, as has been said, these are days of wiser methods and active business, we need enlightenment to get out of our business the very best results.

So active indeed is business that almost from day to day better methods are evolved, also come new and different obstacles which on the morrow have dissolved to a recollection and been succeeded by others more alarming. A few years ago the department store was the rock upon which the small dealer's ship would be wrecked; their stock, their methods, everything about the department store could not be painted black enough, even legislation was invoked to put it out of business. The situation was like the dream of the little boy, who, prattling away to his father, who was reading the newspaper, said, "Papa, I had an awful funny dream last night. I dreamed an angel came down from heaven with a long, long ladder, and he said to me, 'Little boy, do you want to go to heaven?' and I said I did. So he gave me a piece of chalk and said, 'On every rung write a sin you did on earth.' And, papa, after I had gone up a little way I met a man coming down, and say! who do you think it was?" The father put down his paper and said, "I don't know, my son, who was it?" "It was you." "Me! What on earth was I coming down for?" "Why, papa, you were coming down for more chalk."

A few years ago there wasn't chalk enough to write all the sins of the department store. This feeling is now changing, and Hardwaremen in this convention are admitting the department store has come to stay, but are developing plans of conducting the Hardware business

that lessen its terrors. To-day the catalogue house and jobbers' competition have taken the place of the department store. But if history repeats itself may we not be optimistic enough to believe that with a good live association the Hardwaremen of Pennsylvania may work together to render even these but a memory on the path of progress?

#### Resolutions.

The following resolutions relative to the meeting were adopted:

*Resolved*, That the thanks of this association are due the Committee on Arrangements for a considerable share of the success of this meeting, and especially for the excellent and enjoyable banquet served to our members and friends.

*Resolved*, That the Committee on Constitution and By-Laws have performed their duty wisely and well.

We regret that our secretary, J. F. Frye, finds himself unable to longer continue as secretary, owing to the recent purchase of his partner's interest together with other claims upon his time. Therefore, be it

*Resolved*, That this association extends sincere wishes for his future welfare and prosperity, assuring him that his labors toward successfully launching the Pennsylvania Retail Hardware Dealers' Association are highly appreciated and will never be forgotten.

We also extend our thanks to the management of the Monongahela House for courtesies extended, and to Messrs. Burke and Geiger for the excellent address and happy manner of presiding at the banquet. To the local press for excellent accounts of our



T. JAMES FERNLEY.

meetings published, and to R. R. Williams and T. J. Fernley for attending and addressing this convention.

*Resolved*, That we consider the Parcels Post Bill, now before Congress, as a measure calculated to advance catalogue house interests and directly opposed to the prosperity and success of all retail dealers and the community in general, and hereby enter a vigorous protest against its passage.

#### Officers of the Association.

J. F. Frye of Charleroi, former secretary of the association, resigned his office and J. E. Digby of McKee's Rocks was chosen to succeed him, making the staff of officers as follows:

PRESIDENT, G. L. Moore, Brownsville.  
VICE-PRESIDENT, Geo. J. Rudolph, Pittsburgh.  
TREASURER, B. A. Maggini, Braddock.  
SECRETARY, J. E. Digby, McKee's Rocks.

The following gentlemen were elected members of the Executive Committee in accordance with the new constitution:

Samuel McKnight, Allegheny.  
C. J. Kirk, New Castle.  
A. M. Gregg, Monongahela.

#### Banquet.

A banquet was enjoyed on Wednesday evening. R. H. Geiger acted as toastmaster. James Francis Burke was the principal speaker, his topic being "Pittsburgh." Mr. Burke delivered an eloquent address, concluding as follows:

Among her crying needs are more hotels, more railroads, more navigable waters, more water, more street cars, more freight cars, more warehouses, more dwellings, more space, the hump removed and a greater city. Let all these needs be supplied

through persistent public effort and earnest co-operation with those engaged in their achievement. Let every railroad that seeks a terminal here be accorded encouragement and assistance. Let our Legislature, by enabling statutes, open the eyes of all the surrounding towns that have grown up like little children around the same hearthstone, supported by the same industries, inspired by the same hopes, animated by the same general impulses and bearing, when away from home, the proud name of Pittsburgh, in order that they may cast aside the varied garbs of provincialism which dwarf their wearers and stunt their growth at home and which they always shield under Pittsburgh's name.

If Pittsburgh's institutions are good enough to afford a million people employment, Pittsburgh's precincts should be good enough to live in. We condemn the Chinamen for coming to this country to toll and save, yet we are practicing the same principle on a more stupendous scale right here in Allegheny County, earning in the name of Pittsburgh and spending in the name of McKee's Rocks, Sewickley and a score of other towns unknown beyond the borders of our county. Wake up, neighbors. United we shall be a giant; divided we remain provincial pigmies. We are too great to be so small.

Other addresses were made by T. James Fernley, secretary-treasurer of the National Hardware Association; R. R. Williams, Hardware editor of *The Iron Age*, and M. L. Corey, secretary-treasurer of the National Retail Hardware Dealers' Association.

An interesting souvenir, in the shape of a match box, was distributed to those attending the meeting by the H. Adler Company, Pittsburgh, manufacturers of Acme Stoves, Ranges and Ovens.

#### ANOTHER IMPOSTOR.

OUR attention has been called to the operations of another swindler who has lately been circulating among the trade with a view to increasing his bank account in a way that is not in accordance with the law. This individual has been representing himself as connected with A. Baldwin & Co. of New Orleans, and we understand has successfully imposed himself on a number of manufacturing concerns in Ohio, Indiana and Illinois. During the past two or three weeks he has transferred his scene of operations to the East, where he has succeeded in duping some well-known establishments in New York, Philadelphia and Jersey City. A. Baldwin & Co. advise us that he has represented himself variously as Albert Baldwin, F. Baldwin, H. F. Baldwin and J. Frank Baldwin, and by his dignity and courtesy of manners and his apparent knowledge of their business has managed to gain the confidence of certain of their friends and fleeced them of funds on drafts fraudulently drawn against them. From a composite description given by those whom he visited to their sorrow the impostor is a man about 5 feet 10 inches in height, with dark hair and eyes, fair complexion, weight 160 or 170 pounds, and naturally well dressed. His swindles, so far as heard from now aggregate more than \$1000.

#### TESTIMONIAL TO THOMAS F. KEATING.

THOMAS F. KEATING has for ten years been treasurer of the Hardware Club of New York, and was not only one of its charter members but was from the first actively interested in its formation. He has thus contributed greatly to its success. On the occasion of his recent re-election and the completion of his tenth year of official connection with it, the governors of the club presented him with a rich and elegant souvenir as a mark of their personal regard and in recognition of the valuable services he has rendered to the club.

A MEETING of the stockholders of the James C. Lindsay Hardware Company, Pittsburgh, will be held on May 31 to vote on a proposition to increase the capital stock of the concern.

THE report that the office of the American Steel & Wire Company would be removed from the Tradesmen's Building to the Frick Building is incorrect. The offices of this concern will remain in their present location in the Tradesmen's Building.

THE offices of the Standard Chain Company have been removed from the First National Bank Building to the Frick Building, Pittsburgh.



## NOTES ON FOREIGN TRADE.

### BRITISH LETTER.

Office of *The Iron Age*, HASTINGS HOUSE,  
NORFOLK ST., LONDON, W. C.

#### British Patents: An Important Point.

THE most important event in trade politics during the past week has been an influential deputation to the president of the Board of Trade in respect of a new Government bill for amending the Patent Law. A strong feeling was expressed by the leaders of this deputation against permitting British patents to be manufactured in foreign countries. It was pointed out that America and Great Britain are the only two countries where patentees are allowed to work their inventions abroad. So far as America was concerned, it was pointed out that America had no need to do otherwise, apparently on account of the high tariff. The argument advanced is an interesting one, and may bear some fruit, so that it is important for American patentees to watch the progress of events over here very carefully. I may summarize the points put to the president of the Board of Trade briefly as follows:

Patents are not granted for the pleasure of the inventor, to do what he likes with; there must be certain conditions attached to them, and the fundamental principle is to assist an inventor, provided he introduces a new manufacture or trade to the country. Therefore it is essential that any patent granted in this country should be manufactured here also. To this the Government reply that their concern is not so much with the inventor as with the consumer; while in equity it is right to protect the inventor, yet the first consideration is to protect the consumer. Therefore the Government has a proviso empowering the granting of compulsory licenses if the consumer's interests are not attended to. The sub-section of the act reads as follows: "If on the application of any person interested it is proved to the satisfaction of the court that the reasonable requirements of the public with reference to the invention have not been satisfied by reason of the neglect or refusal of the patentee to work the patent or grant licenses on reasonable terms," &c., then any firm desiring to make or deal in the said patents have the power to go to court and obtain a compulsory license. Differences of opinion have developed as to the interpretation of the term "public requirements." One of the deputation remarked that until a patent has been worked and the goods sold, there can be no public requirement. The president of the Board of Trade in reply to this said that such interpretation was distinctly narrow, and that the Government's idea was a much broader one. Still, in practice, it does work out that there is practically no public requirement until the goods are made, and it is always the tendency of the law to take the narrow rather than the broad interpretation. Then comes the expression "reasonable terms." It generally happens that the patentee and the firm desiring to make the patent have quite different ideas as to what are reasonable terms. Suppose, however, a private arrangement is not reached, a firm have the power to go to the courts and obtain compulsory license upon terms arranged by the court. But these terms cannot be granted even by the court until two years have been given to the patentee to work the patent in this country. This proviso opens up years of delay and years of litigation. Another point urged is that practically every new patent displaces some other article. Therefore, say the critics, if the Government grants a patent which displaces the manufacture of some article in this country and yet allows that patent to be manufactured in some other country and sold here, there are two derogatory effects: 1, Labor is displaced, and, 2, when the patent expires a new industry has been built up elsewhere at the expense of the British manufacturer and worker. Another of the deputation gave some startling instances of the inequitable working of the English Patent Law. These facts as presented proved that the absence of the power to compel

the effective working of English patents owned by foreigners was a tremendous shackle on British industry, and a serious menace to their future prosperity.

On the whole, I gather from the president of the Board of Trade that he is not prepared to enforce the working of any patent granted in this country to be worked in England, but that probably he would stiffen up the regulations relating to compulsory licenses and make it much easier to obtain them than it is to-day. The mere fact that this deputation has received so much attention and gained such a hearing is another evidence that the commercial community of Great Britain is rapidly departing from its old free trade ideas.

#### A Non-Slipping Horseshoe Made.

A correspondent of an English journal writing from Warsaw makes a useful business suggestion. He forwards a specimen of a kind of Nail or Screw which is affixed to horses' shoes in Russia to prevent them slipping on the frosty roads. This line has been taken up and largely exported from Germany to Russia, and the correspondent is of opinion that, in view of the antagonistic feeling in Poland against Germany, there is a favorable opportunity for an enterprising British manufacturer to capture the trade. He says that to any firm capable of taking up the manufacture there should be an opening for good business, as Russian Poland alone takes 30,000 roubles' worth of these articles during one season, not to mention other parts of the Russian Empire.

#### The Dusseldorf Exhibition.

Further reports point to the success of the Exposition at Dusseldorf, which is to be opened on May 1. A new special line (double) of railway has been made by the State, round the north end of the town from the central station of the Koln-Minden, Bergisch-Markisch and Rhenish railways (all State lines) to the exhibition, where a new station has been built. The main building is some 400 meters long, facing the Rhine; most of the great iron, steel, mining, railway locomotive and rolling stock, engineering, cannon, gun making, electrical works and textile companies have erected, or are erecting, their own exhibition buildings, so that the arrangements of exhibits will be such as to facilitate rapid and thorough inspection; and the general organization will doubtless be, under such a workmanlike committee, very complete.

#### The Price of Rifles.

During the last year ended March 31 the Government factory at Enfield produced 60,000 rifles at an average cost of £2 9s. 9½d. each, while 20,000 were made at Birmingham at £2 15s. 6d. The Birmingham figure is the average cost to the Government, and of course includes not only the cost of manufacture, but the profit of the company after making all allowances for dead charges and depreciation. On the other hand the Government figure represents only the cost of labor and material, no allowance being made for the large capital sunk in premises, machinery or other dead charges, while the larger number made by the Enfield Government factory enables them, of course, to make at a slightly less price. Still, all allowances made for that, it would seem to be shown that a Government department, working on modern lines, can produce articles very cheaply.

#### Maintenance of Prices.

I have once or twice referred in this column to the importance of American exporters insuring a profit for the retailer. As an example of what a retailer thinks of the importance of this question, I make the following extract from a letter written by a well-known Leeds ironmonger, from which readers of *The Iron Age* will draw their own conclusion:

This week I was accused by a manufacturer of being unpatriotic, because I was selling an article made abroad in preference to his. As a matter of fact, I do not suppose there are many ironmongers in the country who sell a smaller percentage of foreign made articles than my firm do, our rule being "never to go abroad for what we can get made at home," and I know that we often pay dear for our patriotism. As the case

has a good deal of interest, I should like briefly to refer to it without mentioning names. The foreign article has a fixed price of 13 shillings 3 pence each for cash, the English one though listed at 13 shillings 6 pence or 14 shillings is usually sold for 11 shillings 6 pence, while the London stores charge 10 shillings 6 pence for it. The foreign article is a trifle the cheaper and has points in its favor in the mechanism; in fact, if it had "made in England" upon it, I have no hesitation in saying that three out of four people would choose it, even at the difference in price.

About two years ago, at the request of the Leeds Association, I had some correspondence with the English firm about the price; we wanted it raised to 12 shillings or 12 shillings 6 pence all over the country, for at 10 shillings 6 pence it did not pay for handling. It is one of those things that will last an immensely long time with proper use and reasonable care, so the demand is small (I have, in fact, one of the foreign ones, which has been in use over ten years, and is almost as good as new).

The greatest concession I could get from my English maker was "that if the members of the Leeds Association fixed a price, they would see that nobody else in Leeds sold for less," but that was useless, for if Leeds had fixed a reasonable price, say 12 shillings 6 pence each, when the London stores are selling at 10 shillings 6 pence, it would have been one of the best advertisements that the stores could have got, as it was tantamount to saying that "We could not compete with the stores." I was much surprised to find that any English manufacturer would suggest such an impossible working arrangement and then have the audacity to advertise it as a "price maintenance" scheme.

For two years the Leeds ironmongers put up with the English maker for the sake of patriotism, but there is a limit to everything, and about a month ago five of us started selling the foreign make, on which we have an assured fixed price everywhere of 13 shillings 3 pence, but with the English one, which costs more money, if sold at above 10 shillings 6 pence we run the risk of being compared with the London stores to our disadvantage.

#### Drummers in Jamaica.

The Jamaica Gazette of January 23 last contains a law enacted by the Governor and Legislative Council of Jamaica, repealing the tax on commercial travelers enforced by law 36 of 1899.

### THE AUSTRALIAN TRADE.

FROM A SPECIAL CORRESPONDENT.

THE Melbourne Argus of January 24 in an article says:

Two or three years ago the prospects of American competition against England in the Australian markets appeared to the inexperienced to be brilliant. But those who had had a long practical acquaintance with the methods of American trade knew differently. The attempts to extend relations with Australia in manufactured goods have been spasmodic. Lately, also, prices have hardened in some important lines. Then the Americans have had to compete with the Germans in imitation of British manufactures, and the Germans, by dint of lower cost of production and contentment with lower profits—not to speak of the great regularity of their two steamship services—have worsted them in several directions. But the greatest blow to the trade intercourse between the United States and Australia was delivered when the Standard Oil Company, in self defense, were compelled to take the distribution of kerosene in Australia into their own hands. We stated at the time that the freighting of vessels, so far as general merchandising was concerned, would be made far more difficult. The Standard Oil Company are content to send full cargoes, as far as possible, of their oil, and general ships lose accordingly a very substantial stand-by. At first sight, the rather low rates of freight now ruling from New York may be regarded as antagonistic to this view, but with the loss of the direct business in kerosene, Australian merchants are less inclined to look at other American products.

I quote this to show that the minds of Australian writers, whether they take a favorable or an unfavorable view, turn toward American trade. I am not in a position personally to say how far the policy of the Standard Oil Company is likely to influence freightage from New York to Australia. It is, however, a little difficult to follow the reasoning of this writer that American trade is receiving a setback, in face of some trade returns which lie before me. I will take all the Australasian colonies and show that there has been a progressive increase of American trade with them up to and including the year 1900:

#### American Exports to Australasia.

	1897.	1898.	1899.	1900.
New South Wales...	£1,887,877	£1,602,954	£2,219,319	£2,557,961
Victoria .....	590,744	883,472	1,323,757	1,461,880
South Australia....	304,666	310,886	364,801	406,461
Western Australia..	160,055	91,268	203,777	226,035
Tasmania .....	19,245	31,986	20,298	25,253
Queensland .....	265,766	278,837	332,346	357,124
New Zealand.....	628,044	800,411	775,309	1,061,873

I am aware that the figures quoted above do not necessarily belie the statement made in the article quoted. But there is no evidence that American trade has been seriously imperiled during the past 18 months, and on the contrary, with few exceptions, the American commercial grip upon Australasia has been strengthened rather than weakened. It may be said that the new tariff may lead to serious complications, but of course it is evident that if the tariff hits America it hits equally Great Britain and Germany. At the same time it is well for American exporters to see if anything can be done to facilitate transport to Australasia. Some little time ago I pointed out that it was only the mechanical facilities that were lacking to enable the United States to capture a great deal of the trade in South America which is at the present time being done by Great Britain and Germany. The same remark applies to Australasia.

#### British Hardware Exports to Australia.

I regret that I cannot give the actual figures of American exports of Hardware and metal goods to Australia since the imposition of the tariff. The figures of British exports, however, are available. From these I see that there has been a marked decline in the exports of Cutlery, Hardware and Wire, but a distinct increase, both in quantity and value, of Galvanized Sheets and Tin Plates during the first two months of this year. Doubtless some line can be drawn as to the relative prospects of Great Britain, Germany and America with Australasia by a careful examination of the monthly summary of commerce and finance of the United States for November, 1901, in which will be found a useful compilation of all the facts and figures relating to commercial Australia in the year 1900. Meantime it may interest American exporters to know precisely what are the goods in detail which are being exported from Great Britain at the present time. I have therefore put together a complete statement of the Hardware and metal goods sent to Australia from Great Britain last week. It will be seen that, where possible, I have put the values, and otherwise the weights of the goods. It is useful also to know the towns to which these goods were consigned, and they are also included:

Adelaide:	\$450, Cutlery.
21 cwt. Brass manufactures.	\$2750, Cycles.
17 cwts. Hardware.	1 cwt. Flint Glass.
\$535, Implements.	83 cwt. Hardware.
\$410, Instruments.	\$300, Implements.
\$925, Plated Ware.	1 ton Iron manufactures.
Auckland:	\$4330 Machinery (not steam).
13 cwts. Brass manufactures.	\$4900, Steam Engines.
51 tons Cement.	\$1425, Plated Ware.
5 cwt. Crucibles.	Newcastle:
\$480, Earthenware.	3 cwt. Brass.
9 cwt. Hardware.	3 cwt. Copper manufactures.
\$350, Implements.	64 cwt. Hardware.
\$130 Instruments.	82 tons Bar Iron.
53 tons Bar Iron.	8 tons Iron Wire.
6 tons Sheet Iron.	221 tons Gal. Iron Sheets.
21 tons Iron Tubes.	1 ton Iron Chain.
31 tons Iron manufactures.	4 tons Iron Screws.
10 tons Bar Steel.	14½ tons Iron manufactures.
25 tons Steel Plates.	\$725, Machinery (not steam).
\$240, Machinery (not steam).	Perth:
\$735, Plated Ware.	\$350, Cutlery.
Brisbane:	\$150, Earthenware.
4 no. Rifles.	\$350, Implements.
7 tons Iron Tin Plates.	2 tons Iron Safes.
\$75, Plated Ware.	1 ton Bar Steel.
Christchurch:	1 ton Steel manufactures.
\$225, Cycles.	\$650, Plated Ware.
\$10 Machinery (not steam).	Timaru:
Fremantle:	\$25, Safety Fuse.
\$1625, Gellignite.	25 cwt. Hardware.
\$370, Cutlery.	3 tons Iron manufactures.
3 cwt. Hardware.	Wanganui:
\$440, Implements.	43 cwt. Hardware.
10 tons Gal. Iron Sheets.	\$105, Implements.
15 tons Iron manufactures.	1 ton Iron manufactures.
6 tons Bar Steel.	2 tons Steel.
\$5910 stn. Mining Machinery.	\$280, Machinery (not steam).
\$755, Machinery (not steam).	Sydney:
\$2395, Plated Ware.	63 Guns.
Hobart:	91 cwt. Brass manufactures.
\$1665, Earthenware.	10 cwt. Copper manufactures.
2 cwt. Hardware.	\$4035, Cutlery.
\$850, Steam Engine Machinery.	\$650, Cycles.
\$4870 Vacuum Brake material.	\$185, Earthenware.
\$65, Plated Ware.	\$550, Electrical materials.
Launceston:	6 cwt. Flint Glass.
14 Guns.	239 cwt. Hardware.
\$175, Earthenware.	\$1745, Implements.
17 cwt. Hardware.	\$835, Instruments.
13 tons Iron Tubes.	79 tons Bar Iron.
Melbourne:	92 tons Railroad Iron.
82 no. Guns.	8 tons Iron Wire.
\$375, Gun accessories.	511 tons Gal. Iron Sheets.
6 cwt. Brass manufactures.	47 tons Iron Tin Plates.
4 cwt. Copper manufactures.	4 tons Iron Tubes.
	52 tons Iron manufactures.



18 tons Bar Steel.  
800 tons Steel Rails.  
76 tons Steel manufactures.  
\$125, Machinery (not steam).  
\$2500, Metals.  
\$2080, Motor Car.  
\$1090, Plated Ware.  
Wellington:  
\$105, Safety Cartridges.  
\$25, Bulleted Caps.

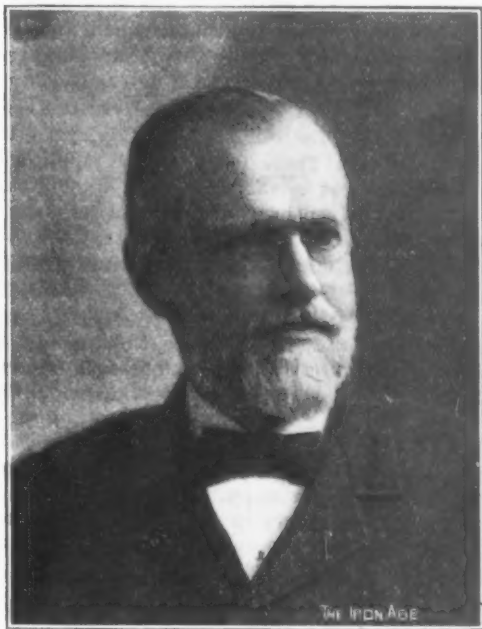
5 cwt. Brass manufactures.  
\$65, Earthenware.  
86 cwt. Hardware.  
\$635, Implements.  
7 tons Bar Iron.  
6 tons Sheet Iron.  
30 tons Gal. Iron Sheets.  
10 tons Iron manufactures.  
\$750, Machinery (not steam).  
\$100, Plated Ware.

#### The Australasian Tariff.

I have several times referred to the difficulties created by the Australasian tariff. From correspondence to hand from Australia it is evident that great diversity of opinion exists as to its wisdom. The Australians understand a tariff for revenue, but they are rapidly coming to the conclusion that the inconvenience and dislocation of trade caused by excessive ad valorem charges are not worth the candle. The tendency all round is to reduce the tariff. Australia is evidently in for a tumultuous campaign to be waged between the protectionists and the free traders, and this is not unlikely further to upset business conditions.

#### HENRY KNIGHT'S FIFTIETH ANNIVERSARY.

ON Tuesday evening, March 25, Henry Knight of Newlin, Knight & Co. invited about 100 of his friends to a dinner in The Bourse, to celebrate the completion of his fiftieth year in the Hardware trade. After partaking of the good things on the very excellent menu, speech making and music were pleasantly alternated. T. J. Fernley was requested to assume the duties of toastmaster, and in his usual breezy style called for remarks from W. C. Peters, head of the house of Jas. M. Vance & Co. Needless to say Mr. Peters was equal to the occasion. He and the host of the evening began their business career in the same year with the firm of Dillworth, Branson & Co., March 25, 1852, being the exact date. The proper term in this age would be that they "accepted positions" or "connected themselves with," but they were old fashioned



HENRY KNIGHT.

enough to say that they "got work." Mr. Knight continued with this firm 13 years and then went to the house of R. & W. E. Biddle & Co. (now Biddle Hardware Company), and remained with them 15 years. In 1884 Mr. Knight and his brother bought out the business of J. G. Brenner, Son & Co., but two years later they transferred their interests to Newlin, Knight & Co.

The addresses were kindly and complimentary and brought out humorous and amusing experiences, but all testifying to the good will and esteem in which Mr.

Knight was held, the result of 50 years of undeviating integrity.

It is a remarkable fact that Mr. Knight and Mr. Peters, who began their business career 50 years ago, have been within three blocks of each other during the entire period and at the present time are only one block apart.

Another feature of the evening was the singing of two ballads, one Scotch and one Irish, by Edward Darby, a gentleman who is now in his eightieth year



EDWARD DARBY.

and has been in business nearly 50 years as a manufacturer of Wire Goods. It would be difficult to find a man half the age of Mr. Darby capable of rendering a song as perfectly and as beautifully as he did on this occasion. His voice may have lost some of its power, but it has lost none of its sweetness and purity of tone, and is still under perfect control and confirms the opinion that Philadelphia business men must be of good stock. John Griffith of Shields & Bro. also rendered the good old Irish song, "The Cruiskeen Lawn," in excellent style and was heartily applauded. William W. Supplee made a few remarks in his usual graceful style, but the speech of the evening was made by Webster R. Walkley of the Peck, Stow & Wilcox Company, New York, whose able and interesting address was listened to with the closest attention and was received with marked evidences of approval. Remarks were also made by Jas. Gillinger, Charles M. Biddle of the Biddle Hardware Company, Geo. Koons of Henry Dsston & Sons, and Geo. D. Boggs of Elizabethtown, Pa.

#### HOWARD & MORSE.

THE copartnership heretofore existing under the firm name of Howard & Morse, 45 Fulton street, New York, expired by limitation on January 1. On April 1 D. R. Morse and F. R. Morse retired from membership in the firm, and their interest has thus terminated. The business, which was established in 1852, will be continued under the same firm name, all accounts being settled by the remaining partners, Edward S. Howard and William B. Howard.

MILFORD MFG. COMPANY, Milford, N. Y., have recently been incorporated with a capital stock of \$6200. The directors of the company are: C. J. Armstrong, A. S. Luther, G. G. Whitney, W. B. Whitney and G. L. Lyon. The company will succeed to the business of Lyon & Whitney, and will continue the manufacture of Bail Bearing Egg Beaters and other novelties.

### PRICE-LISTS, CIRCULARS, &c.

A. H. FUNKE, 101 Duane street, New York: Illustrated catalogue of Baldwin Acetylene Lamps, for use in drifts, tunnels and mines of every sort, or wherever open flame Lamps can be used. These carbide burning Lamps not only give a brilliant light, but, it is claimed, are much more economical than candles.

SARVEN WHEEL COMPANY, Indianapolis, Ind.: Folder entitled "A Good Start," which refers to the beginning of operations in their new plant. Having outgrown their old quarters they built a new factory, which has just been completed. The company manufacture all sorts of Vehicle Wheels, which are referred to as manufactured from selected, thoroughly seasoned Indiana hickory, every hub, spoke and rim being subjected to the most critical inspection.

F. L. TURNER & Co., Orange, Mass.: Circular of Mechanical Tools, including Square with sliding blade. Caliper and Depth Gauge. The circular also gives some testimonies and a list of well-known shops in which the Tools are used.

THE BRONSON-WALTON COMPANY, Cleveland, Ohio: Illustrated catalogue in *fac-simile* colors of Wall Coffee Mills, to hold 1 pound of coffee in the bean, the canisters of which are both metal and glass, square and round, those with metal canisters being lithographed. They also make Decorated Square Box Mills, Roasters, Bakers and Wire Rope Clamps.

REMINGTON ARMS COMPANY, Ilion, N. Y., for whom M. Hartley Company, 315 Broadway, New York, are export agents: Folder illustrating their Remington Bicycle for the season of 1902, which will be of high grade only, similar in design to their 1901 models, which, it is stated, have given excellent satisfaction. The folder illustrates their two models, 77 for men and 78 for women. It also shows their Eccentric Chain Adjustment, Adjustable Handle Bar, Crank, Remington Special Split Tooth Sprocket, Remington Special Chain and Morrow Coaster Brake, which with the New Departure Brake is furnished at the usual extra charges.

HARRINGTON & RICHARDSON ARMS COMPANY, Worcester, Mass.: Catalogue No. 6 describing their line of Guns and Revolvers. It illustrates their H. & R. Automatic Ejecting Single Gun, Non-Ejecting Single Gun, Automatic Double Action Revolver, Police Automatic Double Action Revolver, Premier Automatic Double Action Revolver, Bicycle Double Action Revolver, Bicycle Hammerless Revolver, Hammerless Revolver, Automatic Double Action Revolver, with knife attachment, American Double Action Revolver, Safety Hammer Double Action Revolver, Young America and H. & R. Bull Dog Double Action Revolvers, and Vest Pocket Safety Hammer and Young America Safety Hammer Revolvers. The last page of the catalogue presents a fine illustration of the company's extensive plant.

PARRY MFG. COMPANY, Indianapolis, Ind.: Price-list, 1902, of Surreys, Phaetons, Stanhopes and Fancy Drivers, Concord Drivers, Top Buggies, Road Wagons, Light and Heavy Spring Wagons, &c. Also catalogue illustrating Vehicles designed especially for dealers in and manufacturers of Sewing Machines.

ADAM'S STEEL & WIRE WORKS, W. J. Adam, proprietor, Joliet, Ill.: Catalogue of Adam's Woven Wire and Ornamental Steel Fencing, Steel Posts and Gates, Slat Fencing, Portable Corn Cribs, Window and Door Guards, Stable Fixtures, Bale Ties, Feed Mills, &c. The catalogue also covers Jail Work, which is a new line with this concern. Illustrations are given of their Two Compartment Detention Cage, Lattice Jail Cage, Steel Plate Cell, Bar Jail Cage, &c. They state that they are prepared to bid on any work of this kind.

MARSHALL-SANDERS COMPANY, 301 Congress, street, Boston, Mass.: Catalogue of Electrical Supplies and Specialties manufactured by them, including Sockets, Switches, Cut Outs, Attachment Plugs, Cord Adjusters, Plug and Receptacle, Watchmen's Registers, Mechanical Gongs, &c. The company state that they have doubled the capacity of their plant during the past year, and have added a large amount of special automatic ma-

chinery, which places them in good position to manufacture Incandescent Lighting Supplies, Sockets, Switches and the various forms of Automatic Cut Outs. They have recently perfected a Flush Plug Receptacle, for which they state there is already a very large demand.

J. STEVENS ARMS & TOOL COMPANY, Chicopee Falls, Mass., and 318 Broadway, New York: Illustrated booklet of 16 pages, envelope size, showing the staple or more popular styles of Firearms made by them, including Rifles, Pistols and Shotguns. These catalogues have a blank space on the cover for dealer's name and address.

WORCESTER FERRULE & MFG. COMPANY, Worcester, Mass.: Catalogue of Sheet Metal Stampings for Automobiles, Carriages, &c. They refer to their 19 years' experience in working sheet metal, together with their enlarged and improved facilities, as putting them in a position to handle the most difficult work in sheet metal drawing.

DIAMOND SHEAR COMPANY, Wilmington, Del.: Price-list of their Hand Forged Shears, Solid Steel California pattern Mule and Horse Shears, Grass Shears, Hedge Shears and Long Handled Border, Lawn and Pruning Shears.

BLUFFTON MFG. COMPANY, Bluffton, Ind.: A circular in which they remark, apropos of the season, "28 years in the business proves that we are no spring chicken." Illustrations are given of their American Rotary, Round, Square and Open Washing Machines.

THE ELATERITE ROOFING COMPANY, Denver, Col.: Circulars relative to their Elaterite (mineral rubber) Roofing. One circular gives specifications for laying the Roofing, another describes the four grades in which it is made, while a third illustrates some of the buildings, institutions, &c., upon which it has been used. Their special grade of the Roofing is made with two layers of cloth, consisting of a canvas center and cloth top, Elaterite roofing material, mica surface and paper back.

JOS. H. MASLAND COMPANY, Philadelphia: Illustrated catalogue and price-list of Cotton Woven Hammocks. The company call special attention to their individual self ventilating detachable spring pillow, on which a patent has been applied for, and also to their patented wood and metal spreader.

THE HART & COOLEY COMPANY, New Britain, Conn.: Catalogue and price-list of their Wrought Steel Registers and Ventilators. These Registers are manufactured wholly from wrought metal, so that, it is pointed out, breakage either in use or transportation is practically impossible. Reference is also made to their lightness in weight as effecting economy in freight, and their uniform thickness of 1 3/4 inches over all for all sizes as affording a great saving in stockroom.

EUREKA REFRIGERATOR COMPANY, Indianapolis, Ind.: Catalogue of Opal Refrigerators. These Refrigerators are made in five regular stock sizes in two different styles. Opal, all opal enamel inside and out, Nos. 1, 2, 3, 4, and 5, and oak cases, with opal enamel lining, Nos. 51, 52, 53, 54, and 55. Special sizes will be built to order to fit any desired space. The opal enamel used in their Refrigerators, which have six non-conducting walls, is referred to as a pure white solid enamel, made in large perfectly smooth sheets. The frame is made of 2 1/2 and 3 inch poplar wood, thoroughly seasoned and kiln-dried. The trimmings are solid brass, heavily nickel plated.

A. J. HARWI HARDWARE COMPANY, Atchison, Kan.: Spring and summer catalogue showing Steel Goods, Shovels and Spades, Grindstones, Wheel Barrows, Screens, Hammocks, Refrigerators, Tin and Enameled Ware, Clothes Wringers, Harness, Fishing Tackle, &c.

EVERY MFG. COMPANY, Peoria, Ill.: Catalogue of Agricultural Implements, Threshing Machinery and Farm Wagons. It describes in detail the special features of their machinery, and also presents views of their machines at work in different parts of the country. This company are successors to what were formerly known as the Avery Planter Company and Avery & Rouse Steam Thresher Company.



EDWARD MILLER & Co., Meriden, Conn., 28 and 30 West Broadway, New York, and 63 Pearl street, Boston: Export catalogue No. 76, containing nearly 200 large pages. It illustrates their extensive line of Lamps, Burners, and Trimmings of every description for kerosene oil, light and heavy oils, gas, gasoline and acetylene. They call attention to the large variety of goods shown, including a number of new and original designs and finishes, and to the system of numbering and use of letters to indicate the various Burners or Trimmings. The company are sole manufacturers and patentees of the Empress, Miller, Juno and Dresden Center Draft Lamps.

### TRADE ITEMS.

CLENDENIN BROS., Baltimore, Md., advise us that since February 1, 1900, they have doubled the number of their employees, doubled the number of machines in operation and doubled the amount of business done. They are now running full on all kinds of Nails, both Wire and Cut, and also Small Nails, such as Shoe Nails and Tacks, &c.

THE AMERICAN MFG. COMPANY, Battle Creek, Mich., are manufacturers of Wire Strung Shipping Tags, which they claim are the strongest Shipping Tags made. They have been making a specialty of Printed Tags with wires attached for over 15 years, and have the most improved special machinery to facilitate their manufacture. The company refer to the repeated orders they are receiving from their numerous customers as evidence that their product meets with favor.

TRAVERS BROS. COMPANY, 107 Duane street, New York, manufacturers of Rope, Twine, Cord, Hammocks, &c., will, on or about May 1, move their warehouse and offices from the above address to 41 Worth street, between West Broadway and Church street.

CHARLES D. BARNES, president of the Southington National Bank, Southington, Conn., has been elected president and treasurer of the Southington Cutlery Company to fill the position made vacant by the resignation of Mortimer C. Ogden, who has been president of the company for 11 years. Mr. Ogden resigned because the condition of his health was not robust enough to warrant his discharging this duty in addition to others that require his attention. The annual meeting will be held next July. Judson Baldwin will continue as general manager of the factory. It is the intention of the management to push the business of the company more vigorously than ever.

THE ROBERTSON MFG. COMPANY, 38 Greenwood place, Buffalo, N. Y., manufacturers of Gas Engines, Special Machinery, Tools and Patented Hardware Specialties, will, on or about May 1 next, be installed in their new factory, 203 West Utica street, Buffalo.

MOLINE PLATFORM COMPANY, Moline, Ill., who are manufacturers of the Moline Platform for striking bags, advise us that their business shows a large and constant increase from year to year. At present they have more orders booked than they can fill, as they are having some difficulty in securing raw material promptly.

On February 1 the firm of John S. Worthington, Denver, Col., were reorganized, C. W. Skinner, Jr., of Denver purchasing a half interest. The style is now John S. Worthington Company, Mr. Worthington being manager. The firm are iron and steel merchants and special agents, selling only to the jobbing trade in jobbing centers from the Missouri River to the Pacific Ocean.

The Whiton Hardware Company, Seattle, Wash., have incorporated with a paid in capital of \$50,000. This firm were established in 1888, and are doing a rapidly increasing wholesale and retail business in Shelf Hardware, Mechanics' Tools and Shop Supplies. They intend before long moving to larger quarters than their present location, 118 First avenue South, where they have been doing business for the past 12 years. The officers are C. W. J. Reckers, president and manager; John F. Welborn, vice-president; John Reckers, secretary and treasurer.

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### WRIGHT-DANA HARDWARE COMPANY.

THE house of Wright, Dana & Co., Utica, N. Y., wholesale and retail dealers in Hardware have been reorganized with new blood and additional capital, under the name of Wright-Dana Hardware Company, and the incorporation papers have been filed. This marks a new era in the history of the oldest Hardware establishment in that city, doing business in the same location continuously for over a hundred years. The capital stock of the new company is \$50,000, all paid in, and their directors are E. Z. Wright, B. H. Wright, Arthur J. Lowery, Melvith C. Brown and George Ehram. This means that the older members of Wright, Dana & Co. continue their interest in and supervision of the business, but that the younger members will do the hustling and active work which every business requires to keep it in the lead. The business of the company is largely wholesale, and they deal in Heavy and Shelf Hardware, Iron and Steel, Builders' and Manufacturers' Supplies, Paints, &c. The retail department is to be enlarged and developed and thoroughly modernized. The business was established by James Dana, in 1801, in a log cabin which stood on the site of the present building, 92 Genesee street. The original store was destroyed by fire in 1825, and a new one was built, which served their purpose very well for half a century, but which in 1882 gave way to the present large and modern structure, with pressed brick and stone front. About the year 1826 Mr. Dana admitted to partnership his sons, George S. and James D. Dana. The firm became James Dana & Co., and so continued until long after the death of the founder. J. D. Dana retired, and became eminent as a professor in a leading college. George S. Dana died in 1859. In 1860 E. Z. Wright became interested in the concern, and has been at the head of it ever since. His partner was James W. Dana, grandson of the original founder. In 1882 George S. Dana, also a grandson of the founder and who bears the same name as his father, became a partner in the concern. Wright & Dana continued and enlarged the business, and in 1895 the house were incorporated as Wright, Dana & Co.

### FINE FISHING TACKLE LITERATURE.

WILLIAM SHAKESPEARE, JR., Kalamazoo, Mich., manufacturer of fine Fishing Tackle, has just issued a copyrighted illustrated catalogue of high grade Rods, Reels, Baits, Spinners, Lines, &c., in which attention is called to Fishing Tackle of strictly fine quality, hand made and guaranteed. With the catalogue is a series of booklets artistically gotten up, with illuminated and embossed covers, which are also copyrighted. One is entitled "How to Catch Bass," another "The Art of Bait Casting" and a third "How to Win." The latter is for the purpose of encouraging anglers in the art of bait casting and to make the subject especially attractive competitions involving \$500 in cash, gold and diamond medals, beautiful Reels and other prizes are announced. These competitions begin in May and last until and including September, 1902, the cash prizes each month being respectively \$25, \$15 and \$10, with additional prizes at the end of the season. There are also prizes valued at \$100 each month for the largest bass caught with the Shakespeare baits, full directions for the contests being given in the booklets named above, which will be sent gratuitously for the asking. The contests are free to all anglers in the United States and Canada, no entrance fee required, the results being recorded on a furnished blank and sworn to before a notary or other qualified official.

Koch Adjustable Bracket Company, Peoria, Ill., have sent us two photographs giving interior views of the Hardware store of Louis Kruckemeyer, Cincinnati, Ohio. The photographs are designed to show the application of the company's Brackets to Hardware store shelving. The point is made in regard to these Brackets that they can be readily put up by any one and moved as easily as stock. They are suitable for various widths of shelving.

### REQUESTS FOR CATALOGUES, &c.

*The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

Stephenson & Garrard have purchased the stock of Hardware, Stoves, Tinware, Harness, &c., of the Stephenson Hardware Company, Oxford, Ohio, and will continue business in the same store. The receipt of catalogues, circulars, prices and terms from manufacturers in the above lines will be appreciated by the new firm.

Under date of the 1st inst. a new Hardware store was opened at Metuchen, N. J., the style of the concern being the Metuchen Hardware Company. They will be pleased to receive catalogues, &c.

Sawyer Hardware & Supply Company, Pawtucket, R. I., are about to reorganize their business, and would be glad to receive catalogues and price-lists relating to general Hardware and Mill Supplies.

Newhall & Fenner, 23 Plaza de Cervantes, Manila, P. I., advise us that they would be glad to receive catalogues, price-lists, &c., from American manufacturers. This concern advise us that they are endeavoring to cover the islands generally in the way of trade, having various agents in the provinces, but do not yet find conditions satisfactory enough to branch out to any considerable extent outside of Manila. Their business is principally a commission one, they buying for the retail dealers and others what they may require in the way of American manufactures. They are keeping something of a stock on hand of Safes, Scales, Office Furniture, Typewriters, sample line of Hardware, Agricultural Implements, &c., and are increasing their stock from time to time as they find the demand of a steady nature. They are making a specialty of American machinery of various sorts, their principal demand being for Agricultural and Saw Mill Machinery, including Engines and Bollers. They are represented in New York City by the American Machinery & Export Company, 120 Liberty street.

### AMONG THE HARDWARE TRADE.

W. S. Brown has succeeded Clapp & Brown in the Hardware, Stove and Plumbing business in Cherryvale, Kan.

C. W. Amspacher has lately opened up in business in Apache, O. T., handling Heavy Hardware and Agricultural Implements.

Boyer & Osborne have engaged in business at Battle Creek, Neb., carrying a general line including Hardware, Tinware, &c.

E. C. Whitlock has opened a Hardware store at Kinross, Iowa, with tin shop and pump department in connection with it.

Jasper McCrillis has sold his Hardware business in Modale, Iowa, to Bourn & Zahner. The new proprietors will add materially to the stock thus acquired.

W. T. Morris has disposed of his business in Central City, Neb., to Ross Brothers, who will continue at the old stand. The new firm will double the stock and do a cash business, both in buying and selling.

B. W. Henderson has succeeded Henderson & Cleveland in the Hardware, Stove and Farm Implement business in Rodney, Iowa.

Hawley & Dewhurst, Blanchard, Iowa, have taken into partnership with them W. J. Boyle, and the style of the concern is now Hawley, Dewhurst & Boyle. They have erected a new brick building for their Implement



business, and changed their old building into a Hardware store. They are now handling Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, &c.

The Hardware business of Chas. W. Kayser, St. Louis, Mo., has been sold to Otto Eble, who will continue at the old stand.

Strong Hardware Company, wholesale and retail dealers in Heavy, Builders' and Carriage Hardware, Mill Supplies, &c., Burlington, Vt., have purchased S. W. Woodbury's stock of Hardware at Northampton, Mass. The stock inventoried at \$20,000. It will be shipped to Burlington.

### MISCELLANEOUS NOTES.

#### Yankee Spiral Ratchet Screw Driver No. 31.

North Bros. Mfg. Company, Philadelphia, Pa., for whom John H. Graham & Co., 113 Chambers street, New York, are general sales agents, have put on the market the Yankee spiral ratchet screw driver No. 31, which in principle is the same tool as their No. 30, except that the spindle, nuts, bits, and handle are all larger and of heavier construction. This tool is offered for use in car shops and kindred places where heavy screws must be driven or withdrawn. Three bits of different widths are included with each tool. The extreme length of tool with a bit in the chuck is 26 $\frac{3}{4}$  inches extended and 17 $\frac{1}{2}$  inches closed. They are put up nicely, one in a strong pasteboard box.

#### Sleeper and Sheet Metal Clips.

Hurd & Co., 570-576 West Broadway, New York, have standardized their New York sleeper clips to fasten wooden sleepers to I-beams, since they were illustrated in these columns November 8, 1900. The concern have also arranged to deliver the sheet metal clip of their manufacture, thus covering the field as they were not prepared to do at that time. The standard sizes of the sleeper clips are 2 and 2 $\frac{3}{4}$  inches, the number per hundred pounds being respectively 3700 and 3100. The sheet metal clips are 2 $\frac{1}{2}$ -inch, 1050; 3-inch, 800; 3 $\frac{1}{2}$ -inch, 640, and 4 $\frac{1}{2}$ -inch, 500, to the 100 pounds. Both articles can be furnished in special sizes to order.

#### T. F. C. Water Proof Unions.

Translucent Fabric Company, Quincy, Mass., are manufacturing the T. F. C. water proof unions for wrapping and packing, which are designed especially for domestic and export shipments. They are referred to as a perfect protection against injury by dampness or water, and being odorless will not in any way affect the most delicate goods. As the cloth and burlap unions are very strong, it is pointed out that in many cases no other packing for shipments will be required, which is an important consideration where, on account of transportation charges, lightness of weight is desirable. The unions are offered in four grades: D and B, cloth backing; F, burlap backing, and A, paper backing. They are put up in 36 and 40 inch rolls, 100 yards to the roll. Special sizes will be made to order. The company refer to the unions as very satisfactory for wrapping up tools, hardware, machines, &c.

#### Crack Shot and Favorite Rifle Improvements.

The J. Stevens Arms & Tool Company, Chicopee Falls, Mass., and 318 Broadway, New York, announce that the Stevens Crack Shot rifle of their manufacture is now chambered for the 0.22 long rifle cartridge, instead of the 0.22 short as formerly, thus enabling the barrel to take the 0.22 caliber long, 0.22 short and C. B. caps. They are likewise making this rifle for the 0.32 caliber short rim fire cartridges at the same list and same net price as the 0.22 rim fire. In connection with their Favorite rifle, an improvement has been made by adding a knurled ring screwed to the barrel next to the frame,

which makes an adjustment to take up wear, so that the lever can always be made to cam tight.

#### Enameled Tea and Coffee Pots and Pans.

The Cleveland Stamping & Tool Company, Cleveland, Ohio, manufacturers of Lava enameled solid steel hollow ware, have recently begun the production of a new line of tea and coffee pots, dish and rinsing pans and the Utility kettle, all of which are made in mottled brown and white. The coffee and tea pots have wood handles and enameled covers, and are made in 1 $\frac{1}{2}$ , 2, 3 and 4 quart sizes. They also make seamless deep dish and rinsing pans in 10, 14, 17 and 21 quart sizes. The Utility kettle for milk, beer, oysters, &c., has a capacity of 1 $\frac{1}{2}$ , 2, 3 and 4 quarts, all of which are shown in a supplement to their 1901 catalogue.

#### Hero Emery Grinder No. 10.

Robertson Mfg. Company, 38 Greenwood place, Buffalo, N. Y., manufacturers of patented hardware specialties, special machinery, tools, &c., have just brought out the No. 10 Hero emery grinder, here illustrated. It is referred to as a strong, practical machine with great speed and power. It has a special steel



Hero Emery Grinder No. 10.

chain belt, running on toothed wheels, giving a positive drive with very little friction. The balance wheel is heavy, with a hardened steel shaft and a new anti-friction bearing. The column is curved, giving the operator a much better position in which to work than with a straight column, at the same time increasing the leverage on the treadle. The base, column and head are three distinct castings, so made that duplicate parts can be furnished if necessary. The  $\frac{3}{8}$ -inch steel spindle runs in large bearings milled from the solid metal to an accurate fit and is geared 19 to 1 of the treadle. The head is adjustable in the column to take up any slack in the chain as it occurs from constant use. The height of the machine is 40 inches and it is furnished with two emery wheels 6 x  $\frac{3}{4}$  inches. With each machine is also supplied a special holder for grinding skates, knives, shears, &c., together with a wrench fitting all screws. This device is especially suited to the use of repair men, blacksmiths, plumbers and others having tools to grind.

### Yankee Automatic Drill No. 43.

North Bros. Mfg. Company, Philadelphia, Pa., for whom John H. Graham & Co., 113 Chambers street, New York, are manufacturers' agents, have just brought out the Yankee automatic drill No. 43, here illustrated. This is somewhat similar in general character to other tools in the "Yankee" group, of which they make a number for driving screws, drilling, &c. This implement is intended for carpenters, cabinet makers and others who bore holes in wood for various purposes, as for screws, brads and nails. It will bore holes in hard



Yankee Automatic Drill No. 43.

or soft woods without splitting, by simply pushing the handle down, thereby revolving the drill, an interior compression spring returning the handle to its place when the pressure is removed, the return movement causing the drill to reverse the revolutions and clear the flutes of chips. This tool is supplied with three drill points put up in a round turned wood case, their diameter being 1-16, 5-64, and 3-32 inch. The chuck is operated by turning the knurled sleeve slightly until the pin is in a long slot and then moving the sleeve toward the handle until the pin reaches the end of the slot. The drill points can then be inserted or removed from the chuck. When the sleeve is pushed back and turned so pin is engaged in the notch at the end of the slot the drill point is held rigidly in the chuck. The handle is of a mahogany finished wood and all metal parts other than the spiral spindle are nicked and finely finished. The length over all of the tool with drill in position, as seen in the cut, is 10 3/4 inches. They are put up singly in a strong paper box.

### National Roller Bearing Carpet Sweepers.

The National Sweeper Company, Marion, Ind., are now offering their National roller bearing carpet sweepers, here illustrated. Some of the characteristics of this innovation in carpet sweepers is the roller bearing, shown in Fig. 2, by which the manufacturers say a carpet sweeper runs a half easier than without this bearing. The bearing is protected by dust caps to



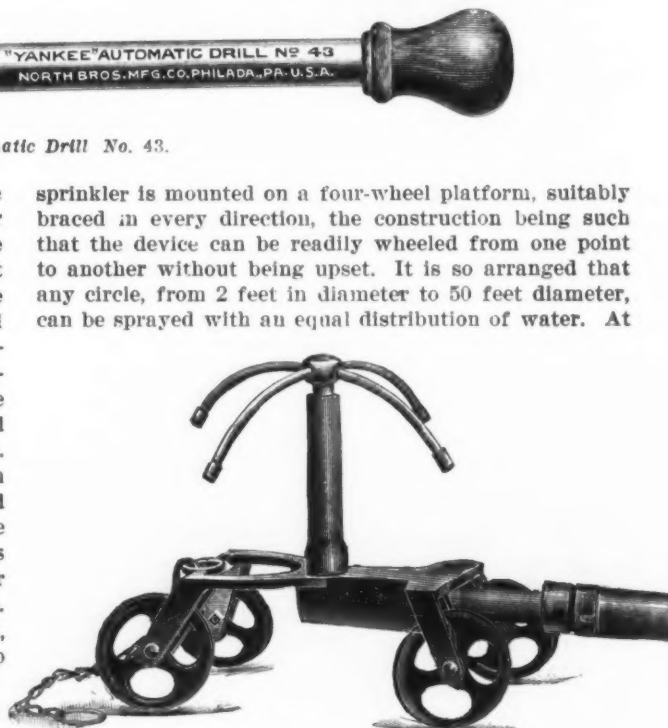
Fig. 1.—National Roller Bearing Carpet Sweeper.

keep out dust and dirt. Another feature is their new steel handle ferrule, made of heavy gauge steel, which is screwed on over the wooden threads of the handle, glued and riveted, to do away with the annoyance of broken or worn out threads. This ferrule not only

for shipment in separate cartons, of a special patented design, which protects the highly finished surfaces from being injured or scratched in transit. Since less than a year ago they have increased their models from 3 to 18, each of which is supplied in an assortment of finishes. A handsome catalogue is in course of preparation for distribution to the trade in the near future.

### New Century Lawn Sprinkler.

Yost-Miller Company, Toledo, Ohio, are manufacturing the New Century lawn sprinkler here shown. The



New Century Platform Lawn Sprinkler.

the opposite end from the coupling to which the hose is attached there is a chain with large ring by which to move the apparatus about.

### Towel Rack with Glass Balls and Bar.

The Searls Mfg. Company, Newark, N. J., represented in New York by Frederic Klages, 127 Duane street, have recently put on the market a towel rack with glass bar

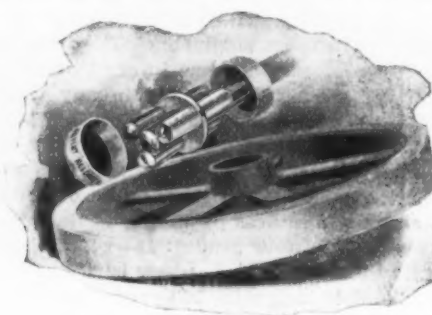


Fig. 2.—Roller Bearing Detail.

and glass balls at the ends, as here illustrated. The rack is made in three sizes, 24, 30 and 36 inches long, extending 3 1/4 inches from the wall. The glass balls are 2 1/4 inches in diameter, the annealed glass portions contrasting handsomely with the nicked brass sockets. It is



Towel Rack with Bar and Balls of Glass.

makes a finely finished article, but the handle can be screwed tightly into the sweeper bail. All of the better grades of sweepers made by the company are packed

the intention later to bring out a line of similar racks with ornamental glass balls instead of the plain surface, as here shown.



### Shelby Floor Hinge.

The Shelby Spring Hinge Company, Shelby, Ohio, are manufacturing the Shelby Chief double acting spring floor hinge, as here shown. Fig. 1 illustrates the upper parts for the top of the door and the casing, Fig. 2 representing that portion of the hinge which is mortised into the corner of the bottom of the door,



Fig. 1.—Pinle and Socket for Top of Door.

the lower plate, however, being secured to the surface floor and not mortised in, as is usually the practice. The working parts that control the double swinging movement of the door are all in the part cut away, seen in Fig. 3. The claims made for this construction by the manufacturers are that it is unnecessary to cut a large hole in the floor to receive the actuating mechanism, which is sometimes impossible where iron beams come near the surface. Also that the parts are not liable to injury by the absorption of water or damp-

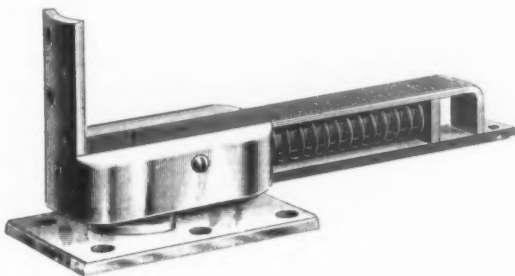


Fig. 2.—Lower Portion of Shelby Floor Hinge.

ness, and that the hinge is secured to the surface of the floor after the hinge has been applied to the door; a simple and easy operation which permits of bringing the door to exact alignment before screwing the floor plate in position. The tension of the spring can be regulated at any time after the door has been hung, thus enabling an individual to adjust the swing of the door as desired. The weight of the door is carried on ball bearings. Another point made is that, if doors

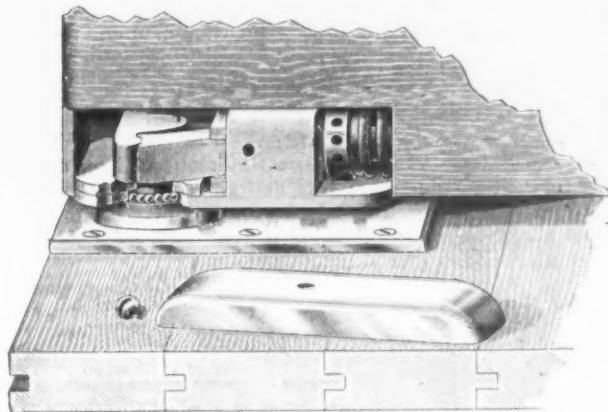
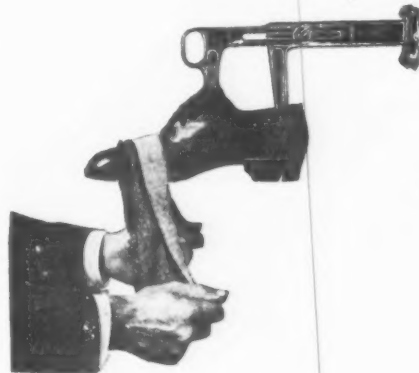


Fig. 3.—Sectional View of Bottom of Shelby Floor Hinge.

equipped with this hinge are removed and put away for a season, for any reason whatever, the floor does not present a mutilated appearance and the hinge is in its place on the door ready for replacing when needed. Where used in connection with cement, concrete or tile floors no metal box is required.

### Coulter, Jr., Shoe Holder.

The Coulter Mfg. Company, 1104 Chestnut street, Philadelphia, Pa., have put on the market the Coulter, Jr., shoe holder, as here illustrated. This is a device for holding shoes, those of either men or women, so that they can be conveniently polished by the individuals themselves or professionals who make a business of it, this system making it especially easy to obtain a fine polish with a cloth instead of relying entirely on a brush. It has a detachable bracket which can be screwed to wall, door or casing, so that the projecting holder can be taken down when not in use. Two interchangeable

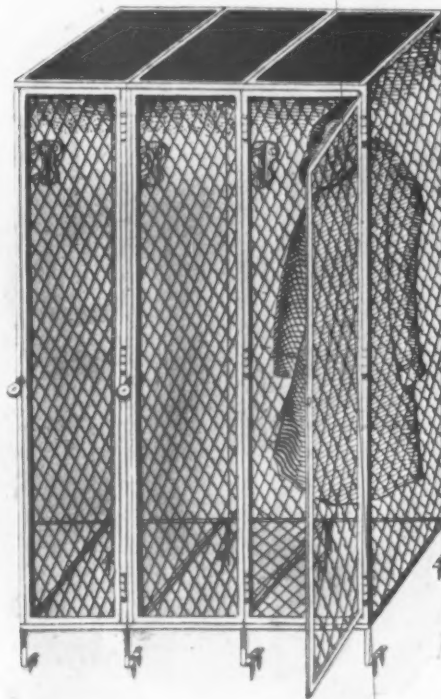


Coulter, Jr., Shoe Holder, Showing Method of Using.

lasts are provided to accommodate large or small shoes of either sex. To make a firm, snug fit the arm is lengthened by loosening the thumb screw and pulling the handle forward to the desired length and tightening the screw. The holder is put up complete, with a box of polish and polishing cloth, and weighs but 3 pounds.

### Sanitary Wire Locker.

Fred J. Meyers Mfg. Company, Hamilton, Ohio, are manufacturing the sanitary locker as here illustrated.

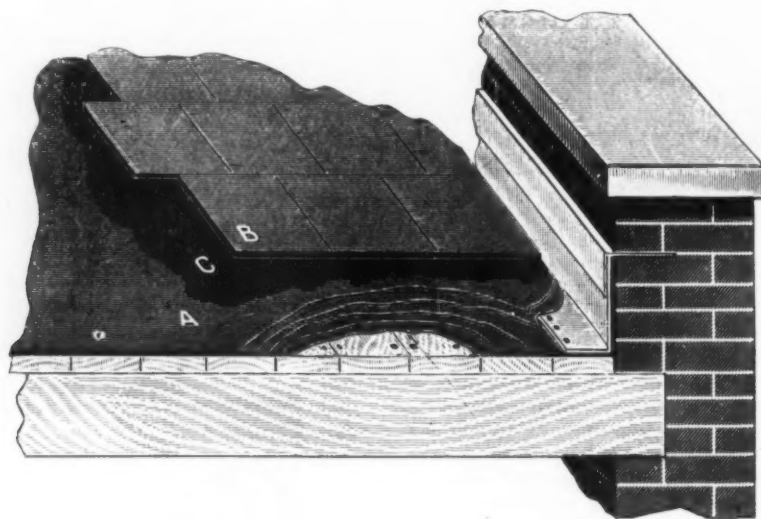


Sanitary Wire Locker.

It is designed for the safe keeping of overcoats, wraps, hats, umbrellas, rubbers, &c., and is provided with a good lock and key, there being the necessary key

changes to avoid duplication. This locker is made entirely of metal and is open at sides and bottom for free circulation of air and proper ventilation, the top consisting of one piece of sheet steel to prevent as far as possible dust or dirt settling on the contents of the locker. The wire strands of the locker sides and bottom are so interwoven as to make it practically impossi-

ble to spread the meshes apart for the removal of clothing, &c. This form of construction permits of the safeguarding of clothing, the free admission of light and air and the easy cleansing of the lockers at suitable intervals, being especially recommended by the manufacturers for installation in shops, factories, schools, gymnasiums, and various institutions of a public character.



*Roof Section, Showing Asphalt Tiles and How Applied.*

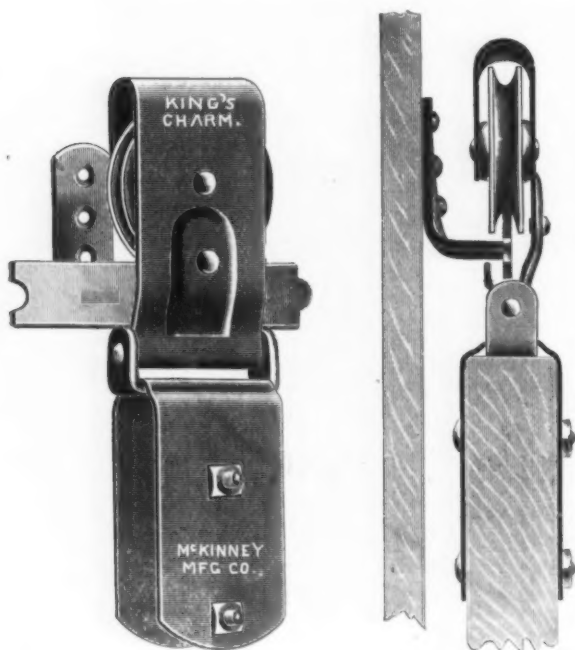
capable of sustaining ten times the weight of an ordinary door. The track is straight and cut in lengths of 4, 6, 8 and 10 feet, put up in bundles of four lengths each. The hangers are packed one pair in a box with bolts and one dozen pairs in a case.

#### Asphalt Roofing Tiles.

The Commonwealth Roofing Company, 100 William street, New York, are introducing their asphalt tiles for roofing, as here illustrated. What the company claim for this material is that it offers a new combination of accepted and standard materials, making possible a paved roof, light, strong, and flexible, made entirely of fire, water and frost proof bituminous substances. The sectional view of a roof herewith shows how the various features are combined. Letter A indicates layers of roofing felt cemented together, which is the same water proof base and binder as has been used for 40 years under slag, gravel, tile, and brick roofing. Letter B refers to the natural asphalt concrete tiles, another proved material in use for generations for street paving, walks, and floors. Letter C represents a thin layer of asphaltic cement of the same nature as both felt and tiles, used to bond the felt and tile and cause a perfect union. The tiles are 10 x 10 x 1/2 inches as supplied for roofing.

#### Marble's Handy Fish Knives.

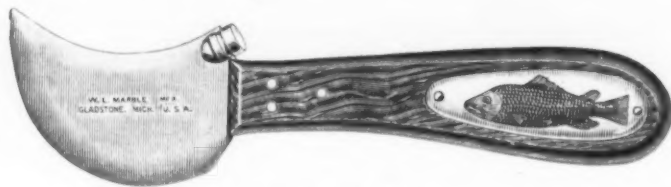
Marble Safety Axe Company, Gladstone, Mich., are manufacturing a line of Handy fish knives, one pattern of which is here illustrated. The cut shows the No. 2. Nos. 1 and 3 being of the same general character with



*Fig. 1.—King's Charm Hinge Joint Barn Door Hanger.*

*Fig. 2.—Side View of Same Hanger.*

entirely of steel. It has steel roller bearings and runs easily on any length of track. The wheel is covered and the hinge joint feature makes it flexible so that it will not bind when the door is swung in or out. The device



*Handy Fish Knife.*

some differences in the style of the blades. The blades are referred to as being of the best hand tempered steel, rosewood handled and inlaid with German silver for name and address at small additional cost. The knives are intended especially for cleaning and scaling fish.



# Current Hardware Prices.

REVISED APRIL 1, 1902.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol @. Thus 33½@33¼&10% signifies that the price of the goods in question ranges from 33½ per cent. discount to 33¼ and 10 per cent. discount.

**Cut Prices.**—In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 4, 1901), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters Blind—

Domestic, 7 doz. \$3.00...33½@33¼&10%  
North's...10%  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent...25&5%  
Taplin's Perfection...30%

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Armand Hammer, Wrought...\$18.80@84¢  
Muel Patent Treaton...\$18.80@84¢  
Eagle Anvils...\$18.80@84¢  
Hay-Budden, Wrought...\$18.80@84¢  
Horseshoe brand, Wrought...\$18.80@84¢

## Imported—

Peter Wright's...\$18.80@84¢

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00...20%

## Apple Parers—See Parers, Apple, &c.

## Aprons, Blacksmiths'—

Hull Bros. Co.:  
Lots of 1 doz...25%  
Smaller Lots...20%  
Lots of 3 doz...30%

## Augers and Bits—

Com. Double Spur...70@70¢1%  
Boring Machine Augers...70@70¢10%  
Car Bits, 12-in. twist...60@60¢10%  
Jennings' Pattern  
Auger Bits...50¢10¢50¢  
Ford's Auger and Car Bits...40¢10%  
Foster Pat. Auger Bits...25%  
C. E. Jennings & Co.:  
No. 10 ext. tip, K. Jennings' list...40%  
No. 30, K. Jennings' list...50%  
Russell Jennings...25&10&2%  
L'Hommedieu Car Bits 5&10&15&10&25%  
Mayhew's Countersink Bits...45%  
Pugh's Black...20%  
Pugh's Jennings' Pattern...35%  
Snell's Auger Bits...60%  
Snell's Belt Hangers' Bits...50&10%  
Snell's Car Bits, 12-in. twist...60%  
Wright's Jennings Bits (K. Jennings' list)...50%

## Bit Stock Drills—

Standard List...65@65¢5%

## Expansive Bits—

Clark's small, \$18; large, \$26...50&10%  
Lavigne's Clark's Pattern, No. 1, 1 doz., \$26; No. 2, \$18...50&10%  
C. E. Jennings & Co., Steer's Pat...35%  
Swan's...60%

## Gimlet Bits—

Common Double Cut, gro. \$2.25@2.75  
German Pattern...gro. \$4.00@4.75

## Hollow Augers—

Bonney Pattern, per doz. \$11.00@11.50  
Ames...25&10%  
New Patent...25&10%  
Universal...20%  
Wood's Universal...25%

## Ship Augers and Bits—

Ford's...40%  
Snell's...40%  
C. E. Jennings & Co.:  
L'Hommedieu's...15&10%  
Watrous'...40%

## Awl Hafts, See Hafts, Awl.

## Awls—

Brad Awls:  
Handled...gro. \$2.75@3.10  
Unhandle, Shouldered, gro. \$3.60@4.10  
Unhandle, Patent...gro. 60@70¢  
Feg Awls:  
Unhandle, Patent...gro. 31@34¢  
Unhandle, Shouldered, gro. 32@70¢  
Scratch Awls:  
Handled, Common, gro. \$3.70@4.00  
Handled, Socket, gro. \$11.50@13.00

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

First quality, factory brands...\$6.00  
First quality, jobbers' brands...\$5.75  
Second Quality...\$5.00@5.25

## Axle Grease—See Grease, Axle.

## Axles—

Concord, Loose Collar...45¢@50¢  
Concord, Solid Collar...45¢@50¢  
No. 1 Common...35¢@40¢  
No. 1 & 2 Com. New Style...35¢@40¢  
No. 2 Solid Collar...45¢@50¢  
Nos. 11 to 14...70¢@70¢10%  
Nos. 15 to 18...75¢@75¢10%  
Nos. 19 to 22...75¢@75¢10%

## Boxes, A 16—

Common and Concord, not turned...lb. 4½@4½¢  
Common and Concord, turned...lb. 4½@4½¢  
Half Patent...lb. 4½@4½¢

## Balances—Sash—

Caldwell new list...50%  
Pullman's...60%

## Spring—

Spring Balances...50&10@60%  
Chatillon's:  
Light Spg. Balances...40&10%  
Straight Balances...40%  
Circular Balances...50%  
Large Dial...30%  
Poulsen...50%

## Barb Wire—See Wire, Barb.

## Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb...27¢@30¢

## Beams, Scale—

Scale Beams, List Jan. 12, '85, 40¢10%  
Chatillon's No. 1...30%  
Chatillon's No. 2...40%

## Beaters—Egg—

Stand list Co.:  
No. 9 Rubber...\$4.50  
No. 10 Dover Family Size...\$5.00  
No. 15 Dover House Size...\$5.00  
Riva...\$6.00

## Belows—

Blacksmith, Standard List, 70¢@70¢10%  
C. E. Jennings & Co., Blacksmith...60%  
C. E. Jennings & Co., Hand...33&5%

## Blacksmiths—

Inch...30 32 34 36 38 40  
Each...\$3.50 3.75 4.25 4.50 5.00 5.35 6.15

## Molders—

Inch...9 10 11 12 14 16  
Doz...\$6.75 7.25 8.50 9.50 13.00 14.50

## Hand—

Inch...6 7 8 9 10 12  
Doz...\$3.75 4.25 4.50 5.00 5.7 6.75

## Bells—Cow—

Ordinary goods...75¢5@75¢10%  
High grade...70¢@70¢10%  
Jersey...75¢10%  
Texas Star...50%

## Door—

Abbe's Gong...45%  
Barton Gong...55%  
Home, R. & E. Mfg. Co.'s...1.55&10%  
Lover and Pull, Sargent's...40¢@40¢10%  
Yankee Gong...35%

## Hand—

Hand Bells, Polished...60¢5@60¢10%  
White Metal...55¢5@55¢10%  
Nickel Plated...50¢5@50¢10%  
Swiss...60¢5@60¢10%  
Silver Chime...38½¢@38½¢10%

## Miscellaneous—

Form Bells...lb. 2@2½¢  
Steel Alloy Church and School...50¢10¢5@50%  
National Bell Foundry Co.:  
Superior Cast Steel Church and School Bells...50&10¢5@50%  
Wilmet & Hobbs Mfg. Co., Gongs...70%

## Belting—Rubber—

Agricultural (Low Grade), 75¢10¢@75%  
Common Standard...75¢10¢@75%  
Standard...70¢@70¢10%  
Extra...60¢10¢5%  
High Grade...50¢10¢5@50%  
Boston Belting Co.:  
Seamless Stitched, Imperial...45¢5%  
Boston...50&5%  
Niagara...50&5%

## Leather—

Extra Heavy, Short Lap...70¢10¢@60%

## Regular Short Lap—

Standard...60¢10¢@60%  
Light Standard...65¢10¢@65%  
Leather Lacing...60¢10%

## Cotton—

Rossendale-Reddaway B. & H. Co.:  
Sphinx B and...60&10%  
Durable Brand...70%

## Bench Stops—See Stops, Bench

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters...20%  
Stoddard's Lightning Tire Upsetters...40@50%

## Bicycle Goods—

John S. Lang's Son's 1899 list:  
Chain...50%  
Parts...50%  
Spokes...50%  
Tub...60%

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—  
See Augers and Bits.

## Bit Holders—See Holders.

## Blind Adjusters—See Adjusters, Blind.

## Blind Fasteners—See Fasteners, Blind.

## Blind Staples—See Staples, Blind.

## Blocks—Tackle—

Common Wooden...70¢10¢@75%  
Cleveland's Steel...60¢10¢@70%  
Ford's Star Brand Self Lubricating...60&10%  
Hollow Steel, Ford's Pat. Star Brand...50&10%  
Lane's Patent Automatic Lock and Junior...30%  
Stowell's Novelty, Gal. Iron...50&10%  
See also Machines, Hoisting.

## Boards Stove—

Zinc, Crystal, &c...40¢@40¢10%

## Boils—

Carriage, Machine &c.—  
Common, list Jan. 31, '95...60¢5@...%  
Norway Iron, \$3.00, list Oct. 7, '94...80¢@80¢5%  
Phila. Eagle, \$3.00 list May 24, '99...80¢@80¢5%

## Bolt Ends, list Jan. 30, '95...70¢@...%

Machine, list Oct. 1, '99...65¢5@...%  
Machine with C & T. Nuts...65¢7½@...%  
NOTE.—Jobbers are in many cases underselling the manufacturers.

## Door and Shutter—

Cast Iron Barrel, Round Brass Knob:  
Inch...3 4 5 6 8  
Per doz...\$0.25 30 39 47 65

## Cast Iron Spring Foot—

Inch...6 8 10  
Per doz...\$1.00 1.25 1.75

## Cast Iron Chain, Flat, Japanned—

Inch...5 8 10  
Per doz...\$1.75 1.95 1.30

## Cast Iron Shutter, Brass Knobs—

Inch...6 8 10  
Per doz...\$0.57 80 1.00

## Wrought Barrel Brass Knob—

Inch...3 4 5 6 8  
Per doz...\$0.44 50 61 70 1.28

## Wrought Flush, B. K. 50¢10¢@75¢5%

Wrought Shutter...40¢10¢@40¢10%  
Wrought Square Neck...50¢50¢10%  
Wrought Sunk...50¢50¢10%  
Ives' Patent Door...60%

## Stove and Plow—

Plow...60¢5@...%  
Stove...77½%

## Tire—

Common...77½%  
Norway Iron...80¢@80¢5%  
American Srew Company:  
Norway Phila., list Oct. 16, '94...82½%  
Eagle Phila., list Oct. 16, '94...85%  
Bay State, list Dec. 28, '99...77½%  
Franklin Moor Co.:  
Norway Phila., list Oct. 16, '94...82½%  
Eagle Phila., list Oct. 16, '94...85%  
Eclipse, list Dec. 28, '99...77½%  
Port Chester Bolt & Nut Company:  
Empire, list Dec. 28, '99...77½%  
Key Stone Phila., list Oct. '94...85%  
Norway Phila., list Oct. '94...82½%  
Upon Nut Co.:  
Tire Bolts...77½%

## Borers, Tap—

Borers Tap, Ring, with Handle:  
Inch...1 1½ 1¾ 2  
Per doz...\$4.30 5.00 5.75 7.25

## Boxes, Mitre—

C. E. Jennings & Co...4%  
Per doz., per doz., \$39...40%

## Braces—

NOTE.—Most Braces are sold at net prices.  
Common Ball, American...\$1.15@1.25  
Barber's...50&10¢10¢@60&10%  
Fray's Genuine Spofford's...40%  
Fray's No. 70 to 120, 81 to 123, 207 to 414...60%  
C. E. Jennings & Co...50&10%  
Mayhew's Ratchet...60%  
Mayhew's Quick Action Hay Patent...50%  
P. S. & W. Co. Peck's Patent...60&10¢65&5%

## Brackets—

Wrought Steel...75¢5@75¢10%  
Bradley's Wire Shelf:  
Full cases...80%  
Broken cases...75&10%  
Griffin's Pressed Steel...75%  
Griffin's Folding Brackets...70&10%

## Bright Wire Goods—See Wire and Wire Goods.

## Broilers—

Wire Goods Co...75%  
See Pails

## Buckets, Well and Fire—

See Pails

## Bucks, Saw—

B S...\$4.00  
Hoosier...\$3.00

## Bull Rings—See Rings, Bull.

## Butts—Brass—

Wrought list Sept. '96...40¢@40¢5%  
Cast Brass, Tiebout's...50%

## Cast Iron—

Fast Joint, Broad...50¢50¢10%  
Fast Joint, Narrow...50¢50¢10%  
Loose Joint...70¢5@70¢10%  
Loose Pin...70¢5@70¢10%  
Mayer's Hinges...70¢5@70¢10%  
Parliament Butts...70¢5@70¢10%

## Wrought Steel—

Table and Back Flaps...60%  
Narrow and Broad...60%  
Inside Blind...60&10%  
Loose Pin...60&10%  
Loose Pin, Ball and Steeple...60&10%  
Tip...70%  
Japanned, Ball Tip Butts...70%  
Bronzed Wrt. Nar. and Inside Blind Butts...45¢20¢@45¢55%

## Cages, Bird—

Henryx, Brass:  
3000, 5000, 1100 series...5%  
1200 series...33½%  
200, 300, 600 and 900 series...40&10%  
Henryx, Bronze:  
700, 800 series...40&10%  
Henryx,enameled...40&10%

## Calipers—See Compasses.

## Calks, Toe and Heel—

Blunt, 1 prong...per lb...4½¢@4¢  
Sharp, 1 prong...per lb...4¢@4½¢  
Perkins' Blunt Toe...\$1.30@1.40  
Perkins' Sharp Toe...\$1.40@1.50

## Can Openers—See Openers, Can

## Cans, Milk—

Illinois Pattern, \$1.75 2.10 2.25 each.  
Iowa Pattern...2.40 2.60 each.  
Buffalo Pattern...2.40 2.50 each.  
New York Pattern \$3.00 3.25 3.40 qts.  
Baltimore Pattern \$2.50 2.85 3.10 each.

## Cans, Oil—

Buffalo Family Oil Cans:  
3 5 10 gal.  
\$4.00 6.00 10.00 gro

## Caps—Percussion—

Eley & Co.:  
F. D...per M 32@34¢  
F. L...per M 42@44¢  
G. E...per M 67@69¢  
Musket...per M 82@84¢

## Primers—

Berdan Primers, \$1.00 per M...5%  
B. L. Caps (Sturtevant Shells)  
\$1.00 per M...5%  
All other primers per M \$1.25@1.50

## Carpet Stretchers—

See Stretchers, Carpet.

**Cartridges—**

Blank Cartridges:	
32 C. F., \$5.50.....	10¢5%
32 C. F., \$7.00.....	10¢5%
32 cal. Rim., \$1.50.....	10¢5%
32 cal. Rim., \$2.75.....	10¢5%
B. B. Caps, Con., Ball Swgd.....	\$1.50
B. B. Caps, Round Ball.....	\$1.50
Central Fire.....	25¢
Target and Sporting Rifle.....	15¢10%
Primed Shells and Bullets.....	15¢10%
Rim Fire Sporting.....	50¢
Rim Fire Military.....	15¢5%

**Castors—**

Bed.....	70¢10¢70¢10¢5%
Plate.....	75¢10¢75¢10¢5%
Philadelphia.....	75¢10¢75¢10¢5%
Boss.....	70¢10%
Boss Anti-Friction.....	45¢
Martin's Patent (Phoenix).....	45¢
Payson's Anti-Friction.....	70¢10¢10%
Standard Ball Bearing.....	45¢
Tucker's Patent low list.....	30¢

**Cattle Leaders—**

See Leaders, Cattle.

**Chain, Coil—**

American Coil, Cask lots:	
3-16 1/4 5-16 3/4 7-16 1/2 9-16 1/2	
8-7 6-35 5-30 4-30 4-30 4-25	
1/4 3/4 1 to 1 1/4 inch.	
1-10 4-15 4-15 4-15 per 100 lb.	
Less than Cask lots add 25¢.	
German Coil.....	60¢10¢10%

**Halters and Ties—**

Halter Chains.....	60¢10¢10¢10%
German Halter Chain, list July 21, '97.....	60¢10¢10¢10%
Cow Ties.....	60¢

**Trace, Wagon, &c.—**

Traces, Western Standard: 100 pair	
6 1/2-6-5, Straight, with ring.....	\$30.00
6 1/2-6-5, Straight, with ring.....	\$31.00
6 1/2-6-5, Straight, with ring.....	\$35.00
6 1/2-10-2, Straight, with ring.....	\$38.00
Add 2¢ per pair for Hooks.	
Twist Traces 2¢ per pair higher than	
Straight Link.	
Trace, Wagon and Fancy Chains.....	50¢10¢50¢10¢5%

**Miscellaneous—**

Jack Chain, list July 10, '93:	
Iron.....	60¢10¢10¢10%
Brass.....	60¢10¢10¢10%
Safety Chain.....	70¢50¢70¢10%
Gal. Pump Chain.....	lb. 4 1/4¢
Covert Mfg. Co.:	
Breast.....	35¢25¢
Heel.....	35¢25¢
Rein.....	35¢25¢
Stallion.....	35¢25¢

**Covert Snd. Works:**

Breast.....	70¢
Halter.....	70¢
Hold Back.....	70¢
Rein.....	70¢

**Onelda Community:**

Am. C. Mill and Halters.....	40¢45¢5%
Am. Cow Ties.....	45¢10%
Eureka Coll and Halters.....	45¢50¢5%
Niagara Coll and Halters.....	45¢50¢5%
Niagara Cow Ties.....	45¢50¢10¢5%
Wire Dog Chains.....	45¢50¢5%

**Wire Goods Co.:**

Dog Chain.....	60¢10%
Universal Dbl-Jointed Chain.....	50%

**Chalk—(From Jobbers.)**

Carpenters' Blue.....	gro. 42¢45¢
Carpenters' Red.....	gro. 37¢40¢
Carpenters' White.....	gro. 33¢35¢

**Chalk Lines—See Lines.****Checks, Door—**

Bardsley's.....	40¢10%
Columbia.....	50¢10%
Eclipse.....	60¢80¢10%

**Chests, Tool—**

American Tool Chest Co.:	
Boys' Chests, with Tools.....	55¢
Youths' Chests, with Tools.....	40%
Gentlemen's Chests, with Tools.....	30%
Farmers', Carpenters', etc., Chests,	
with Tools.....	25%
Machinists' and Pipe Fitters' Chests,	
Empty.....	50%
C. E. Jennings & Co.'s Machinists' Tool	
Chests.....	30%

**Chisels—**

Socket Framing and Firmer	
Standard List.....	70¢50¢70¢10%
Huck Bros.....	30%
Charles Huck.....	30%
C. E. Jennings & Co. Socket Firmer	
No. 10.....	60¢10%
C. E. Jennings & Co. Socket Framing	
No. 15.....	60¢10%
Swan's.....	70¢50%
L. & J. White.....	30¢30¢5%

**Tanged—**

Tanged Firmers.....	40¢50¢40¢10%
Black Bros.....	30%
Charles Huck.....	30%
C. E. Jennings & Co. No. 151, 151.....	25%
L. & J. White, Tanged.....	25¢5%

**Cold—**

Cold Chisels, good quality, lb. 13 to 15¢	
Cold Chisels, fair quality, lb. 11 to 12¢	
Cold Chisels, ordinary.....	lb. 8 to 9¢

**Chucks—**

Beach Pat., each \$8.00.....	20%
Massey's Planer and Milling.....	15¢20%
Skinner Patent Chucks:	
Combination Lathe Chucks.....	40%
Drill Chucks, Patent and Standard.....	30%
Drill Chucks, New Model.....	2%
Independent Lathe Chucks.....	40%
Improved Planer Chucks.....	25%
Universal Lathe Chucks.....	40%
Face Plate Jaws.....	40%

**Standard Tool Co.:**

Improved Drill Chuck.....	45%
Union Mfg. Co.:	
Combination.....	40%
Cox Drill.....	30%
Geared Scroll.....	30%
Independent.....	40%
Union Drill.....	40%
Universal.....	40%
Face Plate Jaws.....	35%

**Clamps—**

Adjustable, Hammer's.....	20¢90¢5%
Catnet Sargent's.....	50¢10%

Carriage Makers', P., S. & W. Co. 40&10%	
Carriage Makers' Sargent's.....	50&10%
Beany, Parallel.....	33&10%
Lineman's, Ulca Drop Forge & Tool	
Co.....	40%

**Cleaners, Sidewalk—**

Star Socket, All Steel.....	40%
Star Shank, All Steel.....	\$3.75 net
W. & C. Sargent, All Steel, 7 1/2 in. 4 doz.,	
\$3.05; 8 in., \$3.10; 8 1/2 in., \$3.25.	

**Cleavers, Butchers'—**

Foster Bros.....	30%
New Haven Edge Tool Co.'s.....	40%
Fayette R. Plumb.....	30%
P. S. & W.....	50&50&10%
L. & J. White.....	25%

**Clippers—**

Chicago Flexible Shaft Company:	
Handy Toilet.....	40%
Mascotte Toilet.....	40%
Monitor Toilet.....	40%
Stewart's Patent.....	40%

**Clips Axle—**

Eagle and Superior 1/4 and 5-16	
inch.....	70¢10%
Norway, 1/2 and 5-16 inch.....	70¢10%
Cloth and Netting, Wire	
—See Wire, &c.—	

**Cocks, Brass—**

Hardware list:	
Compression and Plain Bibbs.....	65¢50¢50¢10%
Globe, Kerosene, Racking, &c.	
Cocks.....	65¢10¢70%

**Coffee Mills—See Mills, Coffee.****Coffers, Dog—**

Brass, Pope & Stevens' list.....	40%
Embossed, Gilt, Pope & Stevens' list 30&10%	
Leather Pope & Stevens' list.....	40%

**Compasses Dividers, &c.—**

Ordinary Goods.....	75¢75¢5%
Bemis & Call Hdw. & Tool Co.:	
Dividers.....	65%
Callipers, Call's Patent Inside.....	65%
Callipers, Double.....	65%
Callipers, Inside or Outside.....	65%
Callipers, Wing.....	60%
Compasses.....	50%
J. Stevens A. & T. Co.....	25&10%

**Compressors Corn Shock—**

J. B. Hughes' 1/2 doz.....	\$2.50
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**Conductor Pipe, Galva.—**

L. C. L. to Dealers:	
Territory.....	Not needed.
Eastern.....	70¢2 1/2¢1 1/2%
Central.....	65¢10¢1 1/2%
Southern.....	65¢10%
S. Western.....	60¢12 1/2¢10%
Terms 2% for cash.	
Jobbers receive extra 1 1/2¢2 1/2% on car-	
loads lots, and extra 1 1/2% on car-	
loads crated.	

**Coolers, Water—**

Gal. each.....	2 1/2 3 4 6
Labadore \$1.20 \$1.50 \$1.80 \$2.10 2.20	
Gal.....	2 3 4 6 8
Ice land, ea. \$1.80 \$2.10 \$2.40 \$3.00	
Gal.....	2 3 4 6 8
Galv. Lined Ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00	
Gal.....	2 3 4 6 8
Galv. Lined side handles	
Gal.....	2 3 4 6 8
Each.....	\$1.95 \$2.15 \$2.41 \$3.31 \$4.15, 25%

**Coopers Tools—**

See Tools, Coopers.	
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**Cord—**

Braided, Drah.....	lb. 25¢
Braided, White, Common.....	lb. 17¢18¢
Cable Laid Italian.....	lb. A, 18¢; B, 19¢
Common India.....	lb. 9 1/2¢
Cotton Sash Cord, Twisted.....	12¢10¢
Patent Russia.....	lb. 12 1/2¢13¢
Cable Laid Russia.....	lb. 13 1/2¢14¢
India Hemp, Braided.....	lb. 14¢15¢
India Hemp, Twisted.....	lb. 10¢12¢
Patent India, Twisted.....	lb. 10¢12¢

**Pearl Braided, cotton.....**

Massachusetts, White.....	17¢
Massachusetts, D. ab.....	22¢
Eddystone Braided Cotton.....	26¢
Harmony Cable Laid Italian.....	19¢
O-sawan Mills:	
Crown, Solid Braided White.....	22¢
Braided, Giant, White.....	20¢

**Feetless—**

Cable Laid Italian.....	16¢
Cable Laid Russian.....	15¢10%
Cable Laid India.....	15¢
Braided, White.....	15¢
Phosutz, White.....	10¢10%

**Samson, Nos. 7 to 13:**

Braided, Drah Cotton.....	39¢
Braided, Italian Hemp.....	32¢
Braided, White.....	40¢
Braided, White Cotton, Spot.....	28¢
No. 6, 8, 10, 12 extra.	

**Silver Lake:**

A quality, Drah, 40¢.....	15%
A quality, White, 35¢.....	15%
B quality, Drah, 35¢.....	15%
B quality, White, 30¢.....	15%
Italian Hemp, 40¢.....	15%
Linen, 57¢.....	15%

**Wire, Picture—**

Braided or Twisted.....	85¢10¢10%
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Note.—There is a good deal of confusion in the list, some using old list and others the new list.

**Corn Knives and Cutters**

—See Knives, Corn.

**Corn Planters—**

See Planters, Corn.

**Crackers, Nut—**

Little Giant.....	gr. \$34.00
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**Cradles—**

Grain.....	50%
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**Crayons—**

White Round Crayons, gross, 5 1/4¢@5¢	
Cases, 10) gro., \$1.50, at factory.	
D. M. Steward Mfg. Co.:	
Metal Workers' Crayons, gr. \$2.50	
Soapstone Pencils, round, flat	
or square.....	\$1.50
Poling Mill Crayons.....	\$2.50
Railroad Crayons (compe-	
lition) gr. \$2.00	

See also Chalk.

**Creamery Pails—See Pails,**

Creamery.

**Crooks, Shepherds'—**

Fort Madison, Heavy.....	1/2 doz. \$7.00
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**Fort Madison, Light.....**

1/2 doz. \$6.50	
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**Crow Bars—See Bars, Crow.****Cultivators—**

Victor Garden.....	1/2 doz. \$10.00
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**Cutlery, Table—**

International Silver Company:	
No. 12 Medium Knives, 18 1/2.....	1/2 doz. \$3.50
Star, Eagle, Rogers & Hamilton and	
Anchor.....	1/2 doz. \$3.00
Wm. Rogers & Son.....	1/2 doz. \$2.50
Slimeon L. & Geo. H. Rogers Company:	
12 dwt. Medium Knives.....	1/2 doz. \$3.00
No. 77 Medium Knives.....	1/2 doz. \$2.50

**Cutters—Glass—**

H. H. Mayhew Co.....	60%
Smith & Henshaw Co.....	50%

**Meat—**

Hale's, Nos. 11 & 111 12 & 112 13 & 113	
Per doz.....	\$9.50 12.50 16.00
American.....	30%
Nos. 1 2 3 4 5 6	
Each.....	\$5 \$7 \$10 \$25 \$50 \$100
Confection.....	50%
No. 1 20 40 60 80 10 12	
Each.....	1.75 2.00 2.25 3.00 3.00 4.00
Enterprise.....	25¢25¢7 1/2%
Nos.....	5 10 12 22 32
Each.....	\$2 \$3 \$2.50 \$4 \$5
Dixon's.....	1/2 doz. 30¢10¢40%
Nos.....	1 2 3 4 5 6
Home No. 1.....	1/2 doz. \$22.75 50¢10%
Little Giant.....	1/2 doz. 33¢5¢40%
Nos. 305 310 312 330 322	
Star.....	\$15.00 \$18.00 \$14.00 \$7.00 \$8.00
Sterling.....	1/2 doz. 33¢5¢
Nos.....	1 2
Each.....	\$1.00 \$2.50
New Triumph No. 605.....	1/2 doz. \$24.00
Nos.....	30¢10¢10%
Woodruff's.....	1/2 doz. 30¢10¢40%
Nos.....	1 2 3 4 5 6
Chadborn's Smoked Beef Cutter.....	1/2 doz. \$15.00 \$18.00

**Enterprise Beef Shavers.....**

25¢30%	
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**Slaw and Kraut—**

Henry Disston & Sons:	
Slaw, Corn Grater, &c.....	40%
Kraut Cutters 24 x 7, 30 x 8, 30 x 9, 55 x	
Kraut Cutters 36 x 12, 40 x 12.....	40%
Tucker & Dorsey Mfg. Co.:	
Kraut Cutters.....	40%
Slaw Cutters, 1 Knife, 1 gr.....	\$1.50 \$2.00
Slaw Cutters, 2 Knife, 1 gr.....	\$2.00 \$3.00

**Tobacco—**

All Iron, Cheap.....	doz. \$4.25@4.50
Enterprise.....	25¢50%
National.....	doz. \$21.00.....
Sargent's.....	doz. 45¢10%
Sargent's No. 2 and 21.....	50¢10%

**Washer—**

Appleton's.....	1/2 doz. \$15.00.....
Bouner's.....	50¢10¢10%
Diggers, Post Hole, &c.—	
Dalbey Post Hole Auger.....	per doz. \$9.00
Iwan's Improved Post Hole Auger.....	40%
Iwan's Perfection Post Hole Digger.....	40%

**Kohler's Universal.....**

per doz.....	\$9.00
Kohler's Little Giant.....	1/2 doz. \$14.00
Kohler's Hercules.....	1/2 doz. \$12.00
Kohler's Invincible.....	1/2 doz. \$10.00
Kohler's Rival.....	1/2 doz. \$9.00
Kohler's Pioneer.....	1/2 doz. \$9.00
Never-Break Post Hole Diggers.....	1/2 doz. \$24.00
Samson.....	1/2 doz. \$34.00.....



# Gates, Molasses and Oil- Stebbins' Gauges—

Marking, Mortise, &c.  
Barrett's Comb. Roller Gauge.  
Stanley R. & L. Co.'s Butt & Babbit Gauge.  
Wire, Brown & Sharpe's.  
Wire, Morse's.  
Wire P., S. & W. Co.  
Gimlets—Single Cut—  
Nail, Metal, Assorted, gro. \$1.50 @ 1.60  
Spike, Metal, Assorted, gro. \$2.80 @ 3.25  
Nail, Wood Handled, Assorted, gro. \$1.75 @ 2.00  
Spike, Wood Handled, Assorted, gro. \$3.25 @ 3.50

# Glass, American Window

Jobbers' List, Jan. 21, 1901.  
From store.  
F. O. B. factory, carload lots:  
Single strength.  
Double strength.

# Glue—Liquid, Fish—

List A, Bottles or Cans, with Brush.  
List B, Cans (1/2 pils., pts., qts.).  
List C, Cans (1/2 gal., gal.).  
International Glue Co. (Martin's).

# Glue Pots—See Pots, Glue.

# Grease, Axle—

Common Grade, gro. \$5.00 @ 6.00  
Dixon's Everlasting, 10-m pails, ea. 85¢  
Dixon's Everlasting, in bxs., 2 doz. 1 lb.  
Snow Flake:  
1 qt. cans, per doz. \$2.00; 2 qt., \$3.20;  
1 gal. cans, per doz. \$6.00; 3 gal., \$16.00; 5 gal., \$24.00.

# Grindstones—

Bicycle Emery Grinder.  
Bicycle Grindstones, each.  
Pike Mfg. Co.:  
Improve Family Grindstones.  
Pike Mower, Knife and Tool  
Grinder, each.  
Velox Ball Bearing, mounted, Angle  
Iron Frames, each.

# Guards, Snow—

Cleveland Wire Spinning Co.:  
Galv. Steel #1000.  
Copper #1000.  
Cun Powder—See Powder.  
Hack Saws—See Saws.

# Hafts Awi—

Peg Patent, Leather Top.  
Peg Patent, Plain Top.  
Sewing, Brass Ferrule.  
Saddlers', Brass Ferrule.  
Peg, Common.  
Brad, Common.

# Halters and Ties—

Web.  
Jute Rope.  
Sisal Rope.  
Cover's Saddlery Works:  
Web and Leather Halters.  
Jute and Manila Rope Halters.  
Sisal Rope Halters.  
Jute, Manila and Cotton Rope Ties.  
Sisal Rope Ties.

# Handled Hammers—

Heller's Machinists'.  
Heller's Farmers'.  
Magnetic Tack, Nos. 1, 3, 3, 1.25, \$1.50.  
\$1.75.  
Peck, Stow & Wilcox.  
Payette R. Plumb:  
Plumb, A. E. Nail.  
Engineers' and B. S. Hand.  
Machinists' Hammers.  
Riveting and Timmers'.

# Heavy Hammers and Sledges—

3 lb. and under.  
3 to 5 lb.  
Over 5 lb.  
Wilkinson's Smiths'.  
Handcuffs and Leg Irons  
See Police Goods.

# Handles—

Agricultural Tool Handles—  
Axe, Pick, &c.  
Hoe, Rake, Fork, &c.  
Shovel, &c., Wood D Handles.  
Cross-Cut Saw Handles—  
Atkins'.  
Champion.  
Dixon's.  
Mechanics' Tool Handles—  
Auger, assorted.  
Brad Axl.  
Chisel Handles:  
Apple Tanged Firmer, gro. ass'd.  
Hickory Tanged Firmer, gro. ass'd.  
Apple Socket Firmer, gro. ass'd.  
Hickory Socket Firmer, gro. ass'd.  
Hickory Socket Framing, gro. ass'd.  
File, assorted.  
Hammer, Hatchet, Axe, &c.  
Hand Saw, Varnished, doz.  
Plane Handles:  
Jack, doz.  
Fors, doz.

# Nicholson Simplicity File Handle, #

gro.  
Hangers—  
Barn Door, New Pattern, Round  
Groove, Regular:  
Inch.  
Doz.

# Barn Door, New England Pattern, Check Back, Regular:

Inch.  
Doz.  
Chicago Spring Butt Co.:  
Friction.  
Oscillating.  
Big Twin.  
Chisholm & Moore Mfg. Co.:  
Baggage Car Door.  
Elevator.  
Railroad.  
Columbian Hdw. Co.:  
American Trackless.  
Cronk Hanger Co.:  
100's Axle.  
Roller Bearing.  
Lane Bros.:  
Parlor Ball Bearing.  
Parlor, Standard.  
Parlor, New Model.  
Parlor, New Champion.  
Barn Door, Standard.  
Covered.  
Lawrence Bros.:  
Advance.  
Cleveland.  
Crown.  
New York.  
Peoples.  
Sterling.  
McKinney Mfg. Co.:  
No. 1, Special.  
No. 2, Standard.  
Myers' Stayon Hangers and Track.  
Stowell Mfg. and Foundry Co.:  
Acme Parlor Ball Bearing.  
Atlas.  
Badger Barn Door.  
Baggage Car Door.  
Climax Anti-Friction.  
Elevator.  
Express.  
Interstate.  
Lundy Parlor Door.  
Matchless.  
Nashen.  
Railroad.  
Street Car Door.  
Steel, Nos. 300, 401, 500.  
Stowell Parlor Door.  
Wild West, Nos. 301, 401, 500.  
Zenith for Wood Track.  
Taylor & Boggs Foundry Co.:  
Kiddler's.  
Wilcox Mfg. Co.:  
Bike Roller Bearing.  
C. J. Roller Bearing.  
Cycle Ball Bearing.  
Dwarf Ball Bearing.  
Ives, Wood Track.  
L. T. Roller Bearing.  
New Era Roller Bearing.  
O. K. Roller Bearing.  
Prindle, Wood Track.  
Richards' Wood Track.  
Richards' Steel Track.  
Spencer Roller Bearing.  
Tandem Nos. 1 and 2.  
Underwriters' Roller Bearing.  
Velvet.  
Wilcox Auditorium Ball Bearing.  
Wilcox Barn Trolley No. 123.  
Wilcox Elevator Door Hangers.  
Wilcox Elevator Door Hangers.  
Wilcox Elevator Door Hangers.  
Wilcox Fire Trolley, Roller Bearing.  
Wilcox Le Roy Noiseless Ball Bearing.  
Wilcox New Century.  
Wilcox O. K. Steel Track.  
Wilcox O. K. Trolley.  
Wilcox Trolley Ball Bearing.  
Wilcox Wideman Narrow Gauge Ball Bearing.

# Harness Menders—See Menders.

# Harness Snaps—See Snaps.

# Hatchets—

Best Brands.  
Cheaper Brands.  
Note.—Net prices often made.  
Hay and Straw Knives—  
See Knives.

# Hinges—

Blind and Shutter Hinges—  
Surface Gravity Locking Blind:  
(Victor; National; 1883 O. P.;  
Niagara; Clark's O. P.; Clark's  
Tip; Buffalo).  
No.  
Doz. pair.  
Mortise Shutter:  
(L. & P. O. S., Dixie, &c.).  
No.  
Doz. pair.  
Mortise Reversible Shutter, (Buffalo,  
&c.).  
No.  
Doz. pair.  
North's Automatic Blind Fixtures, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.  
Parker.  
Reading's Gravity.  
Sargent's, Nos. 1, 3, 5, 11 & 13.  
Stanley's Steel Gravity Blind Hinges,  
with screws, \$1.15.  
Wrightsville Hardware Co.:  
O. S., Lull & Porter.  
Acme, Lull & Porter.  
Queen City Reversible.  
Stenger's Positive Locking, Nos. 1 & 3.  
Shepard's Noiseless, Nos. 65, 55, 55.  
Niagara, Gravity Locking, Nos. 1, 3 & 5.  
1908, Old Pat'n, Nos. 1, 3 & 5.  
1908, New Pat'n, Nos. 1, 3 & 5.  
Buffalo Gravity Locking, Nos. 1, 3 & 5.  
Shepard's Double Locking, Nos. 20 & 25.  
Champion Gravity Locking, No. 75.  
Steamboat Gravity Locking, No. 10.  
Inch.  
Doz.

# Gate Hinges—

Clark's or Shepard's—Doz. sets:  
No.  
Hinges with Latches.  
Hinges only.  
Latches only.  
New England:  
With Latch.  
Without Latch.  
Reversible Self-Closing:  
With Latch.  
Without Latch.  
Western:  
With Latch.  
Without Latch.  
Wrightsville Hardware Co.:  
Shepard's or Clark's, doz. sets,  
No. 1 2 3  
Hinges with Latches.  
Hinges only.  
Latches only.

# Spring Hinges—

Holdback, Cast Iron, gro. \$3.00 @ 3.00  
Non-Holdback, Cast Iron, gro. \$7.00 @ 7.50  
J. Bardley  
Bardley's Patent Checking.  
Bommer Bros.:  
Bommer Ball Bearing Floor Hinges.  
Bommer Spring Hinges.  
Chicago Spring Butt Co.:  
Chicago.  
Floor Hinge.  
Garden City Engine House.  
Keene's Saloon Door.  
Triple End.  
Columbian Hdw. Co.:  
Acme, Wrt. Steel.  
Acme, Brass.  
American.  
Columbia, No. 14.  
Columbia, No. 18.  
Columbia, Adjustable.  
Gem new list.  
Clover Leaf.  
Oxford new list.  
Hoffman Hinge & Foundry Co.:  
No. 70 & 80 Holdback Detachable.  
Lawson Mfg. Co.:  
March 88.  
Matchless Pivot.  
Payson Mfg. Co.:  
Oblique.  
Grover Mfg. Co.:  
Ideal, No. 16, Detachable, # gr.  
Ideal, No. 4.  
New Idea No. 1.  
New Idea, Double Acting.

# Wrought Iron Hinges—

Strap and T Hinges, &c., list Mar. 15, 1901:  
Light Strap Hinges.  
Heavy Strap Hinges.  
Light T Hinges.  
Heavy T Hinges.  
Extra Heavy T Hinges.  
Hinge Hasps.  
Cor. Heavy Strap.  
Cor. Ex. Heavy T.  
Screw Hook.  
and Strap.  
Screw Hook and Eye.  
1/4 to 1 inch.  
1/2 inch.  
3/4 inch.  
1 inch.

# Miscellaneous—

Hoffman's Steel Spring Butt Hinges.  
Hoffman's Offset Refrigerator Hinges.  
Hods, Coal—  
Galv. Open.  
Jap. Open.  
Galv. Funnel.  
Jap. Funnel.  
Hoes—  
Scovill and Oval Pattern.  
Grub. list Feb. 23, 1899.  
D. & H. Scovill.

# Handled—

Sept. 1, 1900, List:  
Field and Garden.  
Ladies', Boys', Toy and Onion.  
Street and Mortar.  
Cotton.  
Planters'.  
Weeding.  
Ft. Madison Crucible Garden Hoe.  
Ft. Madison Crescent Cultivator Hoe.  
Ft. Madison Mattock Hoe.  
Regular Weight.  
Junior Size.  
Ft. Madison Sprouting Hoe.  
Ft. Madison Dixie Tobacco Hoe.  
Kretzinger's Cut Easy, per doz.  
W. & C. Ivanhoe.  
B. B. Cultivator Hoe.  
Acme Weeding.  
W. & C. Lightning Shuffle Hoe.

# Hog Rings and Ringers—

See Rings and Ringers.  
Hoisting Apparatus—  
See Machines, Hoisting.  
Hollow Ware—  
See Ware, Hollow.  
Holders—  
Angular, # doz.  
Door—  
Empire.  
File and Tool—  
C. E. Jennings & Co. Model Tool Holders.  
Nicholson File Holders and File Handles.

# Hooks— Cast Iron—

Bird Cage, Reading.  
Bird Cage, Sargent's List.  
Ceiling, Sargent's List.  
Clothes Line, Hoffman's.  
Clothes Line, Reading List.  
Clothes Line, Sargent's List.  
Coat and Hat, Sargent's List.  
Coat and Hat, Stowell's.  
Coat and Hat, Reading.  
Coat and Hat, Wrightsville.  
Harness, Reading List.  
Wire—  
Belt.  
Wire C. & H. Hooks.  
Atlas, Coat and Hat.  
Single Cases.  
Czar Harness.  
Wire Coat and Hat.  
Acme.  
R. B.  
V. H. Grace, Chief and Czar.  
Gem.  
Bright Wire Goods—See Wire.

# Wrought Iron—

Box, 6 in., per doz. \$1.50; 8 in., \$1.75;  
10 in., \$2.00.  
Cotton.  
Wrought Staples, Hooks, &c.,  
See Wrought Goods.

# Miscellaneous—

Bush, Light, doz. \$5.50; Medium, \$6.00; Heavy, \$6.50.  
Grass, Nos. 1 2 3 4  
Best.  
Common.  
Potato and Manure.  
Whiffletree.  
Hooks and Eyes:  
Brass.  
Malleable Iron.  
Covert Saddlery Works' Self Locking  
Gate and Door Hook.  
Crown Picture.  
Rench Hooks—See Bench Hooks.  
Corn Hooks—See Knives, Corn.  
Horse Nails—See Nails, Horse  
Horseshoes—  
See Shoes, Horse.  
Hose Rubber—  
Garden Hose, 3/4-inch:  
Competition.  
3-ply Standard.  
4-ply Standard.  
3-ply extra.  
4-ply extra.  
Cotton Garden, 1/2 in., coupled.  
Low Grade.  
Fair quality.

# Iron— Sad—

From 10 to 10.  
B. B. Sad Irons.  
Chinese Laundry.  
Chinese Sad.  
Mrs. Potts', per set:  
Nos. 60 55 60 65  
66 70 75 80 85 90 95  
New England Pressing, lb.  
Soldering—  
Soldering.  
2 lb. and up.  
Covert Mfg. Co.  
Smith & Hemenway Co's Sets.  
Pinking—  
Pinking Irons, doz. 50 @ 60¢  
Jack Screws—See Screws.  
Jacks, Wagon—  
Covert Mfg. Co., Steel.  
Covert's Saddlery Works'.  
Daisy.  
Victor.  
Lockport.  
Kettles—  
Brass, Spun, Plain.  
Enamelled and Cast Iron—See Ware, Hollow.  
Knife Sharpeners—  
See Sharpeners, Knife.  
Knives—  
Butcher, Shoe, &c.—  
Foster Bros'.  
Hartzell Cutlery Co.  
Smith & Hemenway Co.  
Hay and Straw—See Hay Knives.  
Corn—  
Ft. Madison Cut-Easy, # doz.  
Withington Acme, # doz.  
\$2.75; Adj. Serrated, \$2.20; Serrated, \$2.10; Yankee No. 1, \$1.50.  
Yankee No. 2, \$1.15.  
Drawing—  
Standard List.  
Adjustable Handle.  
Bradley's.  
Cantelo's Folding.  
C. E. Jennings & Co. Nos. 45, 46, 40 & 104.  
Jennings & Griffin.  
Swan's.  
Watrous.  
L. & J. J. White.  
Hay and Straw—  
Lightning.  
Iwan's Sickle Edge.  
Iwan's Serrated.  
Maine.  
Mincing—  
Buffalo.  
Miscellaneous—  
Farriers'.  
Wootenholm's.  
Knobs—  
Base, 2 1/2-inch, Birch, or Maple.  
Rubber tip, gro.  
Carriage, Jap, all sizes, gro.  
Door, Mineral.  
Door, Por, Jap d.  
Door, Por, Nickel.  
Bardsley's Wood Door, Shutter, &c.  
Picture, Sargent's.  
Lacing Leather—  
See Belting Leather.  
Ladders Step Etc.—  
Cooshen Mfg. Co's Step, etc.  
Myers' Noiseless Store Ladders.





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**Sieves and Sifters—**  
**Hunter's Imitation, gro.** \$11.00 @ 11.50  
**Buffalo Metallic Blue, S. & Co.,** gr. 14 & 16 18 & 20  
 \$12.90 \$13.80 \$15.00  
**F. J. Meyers' Mfg. Co.:**  
 Electric Light..... gr. \$11.00  
 Hunter's Genuine..... gr. \$12.50  
 No Name, Hunter's..... gr. \$11.00  
 Standard..... gr. \$11.00  
 Shaker (Harley's Pat.) Flour Sifters..... 90¢  
 1 doz. \$2.00

**Sieves, Tin Rim—**  
 Per dozen  
 Mesh..... 14 16 18 20  
 Black, full size..... \$0.95 98 1.00 1.10  
 Plated, full size..... \$1.05 1.08 1.10 1.20  
 Black, scant..... \$0.75 .80 .83

**Sieves, Wooden Rim—**  
 Nested, 10, 11 and 12 inch  
 Mesh 18, Nested, doz..... \$0.55 @ 0.75  
 Mesh 20, Nested, doz..... .75 @ 1.00  
 Mesh 24, Nested, doz..... .90 @ 1.00

**Sinks—Cast Iron—**  
 Standard list..... 65¢ @ 70¢  
 NOTE.—There is not entire uniformity  
 lists used by jobbers.

**Wrought Steel—**  
 New Era, Galv'd and Enameled..... 70¢ & 5¢  
 New Era, Painted..... 50¢ & 10¢  
 L. & G. Mfg. Co., Galvanized..... 50¢  
 L. & G. Mfg. Co., Enameled..... 50¢

**Sinks, Wagon—**  
 Cast Iron..... 70¢ @ 10¢  
 Malleable Iron..... 70¢ @ 10¢  
 Steel..... 70¢ @ 10¢

**Slates—**  
 Factory Shipments.  
 "D" Slates..... 50¢ @ 10¢  
 Unexcelled, etc., Noiseless Slates..... 60¢  
 Victor, etc., Noiseless Slates..... 70¢

**Wire Bound—**  
 Web Hinge..... 50¢ @ 10¢  
 Slaw Cutters—See Cutters.  
 Slicers, Vegetable—  
 Sterling \$2.00..... 33¢

**Snaps, Harness—**  
 German..... 40¢ @ 10¢  
 Covert Mfg. Co.:  
 Derby..... 35¢ & 3¢  
 High Grade..... 45¢ & 2¢  
 Jockey..... 40¢ & 2¢  
 Trojan..... 50¢ & 2¢  
 Yankee..... 35¢ & 2¢  
 Yankee, Roller..... 30¢ & 2¢

**Covert's Saddlery Works.**  
 Crown..... 60¢  
 German..... 60¢  
 Model..... 60¢  
 Triumph..... 60¢

**W. & E. T. Fitch Co.:**  
 Bristol..... 40¢ & 10¢  
 Empire..... 50¢ & 5¢  
 German..... 40¢  
 National..... 50¢ & 5¢  
 Perfect..... 45¢  
 Clipper..... 50¢ & 5¢  
 Champion..... 40¢  
 Security..... 40¢  
 Victor..... 60¢ & 5¢

**Onida Community:**  
 Solid Steel..... 65¢ @ 65¢  
 Solid Steel..... 65¢ @ 65¢  
 Sargent's Patent Guarded..... 60¢ & 10¢  
 Sargent's Patent Guarded..... 60¢ & 10¢

**Snaths—**  
 Scythe..... 50¢ @ 10¢  
 Snips, Tanners'—See Shears.  
 Soldering Irons—  
 See Irons, Soldering.

**Spoke Trimmers—**  
 See Trimmers, Spoke.  
**Spoons and Forks—**  
 Silver Plated—  
 Good Quality..... 50¢ @ 10¢  
 Cheap..... 60¢ @ 10¢  
 International Silver Co.:  
 1847 Rogers Bros. and Rogers & Hamill-  
 ton..... 40¢ @ 10¢  
 Rogers & Bros., William Rogers Eagle  
 Brand..... 50¢ @ 10¢  
 Anchor, Rogers Brand..... 60¢  
 Wm. Rogers & Son..... 60¢ @ 10¢  
 Simeon L. & Geo. H. Rogers Co.:  
 Silver Plated Flat Ware..... 60¢  
 No. 17 Silver Plated Ware..... 60¢ @ 10¢

**Miscellaneous—**  
 German Silver..... 60¢ @ 10¢  
 Cast Ironware Cutlery Co.:  
 Yukon Silver..... 50¢  
 Simeon L. & Geo. H. Rogers Co.:  
 German or Nickel Silver, Special list  
 1 & 10¢

**Tinned Iron—**  
 Teas..... per gro. 45¢ @ 50¢  
 Tables..... per gro. 90¢ @ 1.00

**Springs—Door—**  
 Gem (Coll.)..... 90¢  
 Star (Coll.)..... 90¢  
 Torrey's Rod, 39 in. per doz. \$1.10 @ 1.25  
 Victor (Coll.)..... 50¢ @ 10¢

**Carriage, Wagon, &c.**  
 24 in. and Wider:  
 Black or 1/4 Bright, lb..... 5¢  
 Bright, lb..... 5¢  
 Painted Seat Springs:  
 1 1/2 x 26 and smaller, per pr. 18¢ @ 53¢  
 1 1/2 x 28 per pr..... 56¢ @ 61¢  
 1 1/2 x 32 and narrower, per pr..... 76¢ @ 80¢

**Cliff's Springs:**  
 Bolster..... 40¢  
 Seat..... 40¢  
 Pole, per pair, 1/2 in. \$1.10; 3/4 in. \$1.25

**Sprinklers, Lawn—**  
 Enterprise..... 25¢ @ 29¢  
 Philadelphia No. 1, per doz. \$1.25; No. 2,  
 \$1.50; No. 3, \$2.00..... 30¢

**Squares—**  
 Nickel plated..... List Jan. 5, 1901  
 Steel and Iron..... 75¢ @ 75¢  
 Rosewood Hdl. Try Square and T-Bevels  
 60¢ @ 10¢  
 Iron Hdl. Try Squares and T-Bevels  
 40¢ @ 10¢

**Diaston's Try Sq. and T-Bevels..... 60¢ @ 10¢**  
**Winterbottom's Try and Miter..... 40¢ @ 10¢**

**Squeezers—Lemon—**  
 Wood, Common, gro., No. 0, \$5.25  
 @ \$5.60; No. 1, \$6.25 @ \$6.50.  
 Wood, Porcelain Lined:  
 Cheap..... doz. \$3.00 @ 3.75  
 Good Grade..... doz. \$5.00 @ 5.50  
 Tinned Iron..... doz. \$0.75 @ 1.25  
 Iron, Porcelain Lined doz. \$2.50 @ 3.25  
 Jennings' Star..... per doz. \$1.85 @ 1.90

**Staples—**  
 Barbed Blind..... lb. 6¢ @ 6¢  
 Electricians', Association list..... 80¢ @ 10¢  
 Fence Staples, same price as Barbed  
 Wire. See Trade Report.  
 Poultry Netting, Staples..... per lb. 25¢ @ 5¢

**Grand Crossing Tack Co.'s list..... 80¢ @ 10¢**

**Steels, Butchers'—**  
 Dick's..... 30¢  
 Foster Bros'..... 30¢  
 Hartzell Cutlery Co..... 40¢ & 5¢  
 C. & A. Hoffmann's..... 40¢

**Steelyards..... 25¢ @ 25¢ @ 10¢**

**Stocks and Dies—**  
 Blacksmiths'..... 40¢ @ 10¢  
 Gardner Die Stocks No. 1..... 50¢  
 Gardner Die Stocks, larger sizes..... 40¢  
 Green River..... 25¢  
 Lightning Screw Plate..... 25¢  
 Little Giant..... 25¢  
 Revere's New Screw Plates..... 25¢  
 Curtis Reversible Ratchet Die Stock..... 25¢

**Stone—Scythe Stones—**  
 Chicago Wheel & Mfg. Co.:  
 Gem Corundum, 10 inch, \$8.00 per  
 gro., 12 inch, \$10.00  
 Pike Mfg. Co. 1901 list:  
 Black Diamond S. S..... per gro. \$12.00  
 Lamolite S. S..... per gro. \$11.00  
 White Mountain S. S..... per gro. \$9.00  
 Green Mountain S. S..... per gro. \$6.00  
 Extra Indian Pond S. S..... per gro. \$7.50  
 No. 1 Indian Pond S. S..... per gro. \$7.00  
 No. 2 Indian Pond S. S..... per gro. \$4.50  
 Leader Red End S. S..... per gro. \$4.50  
 Balance of 1901 list 35¢

**Oil Stones, &c.**  
 Chicago Wheel & Mfg. Co., 1901 list:  
 Gem Corundum Oil, Double Grit..... 50¢  
 Gem Corundum Oil, Single or Double  
 Grit..... 55¢  
 Gem Corundum Razors..... 55¢  
 Gem Corundum Razor Hones..... 50¢

**Pike Mfg. Co. 1901 list:**  
 Arkansas Stone, No. 1, 3 to 5 in. \$2.50  
 Arkansas Stone, No. 1, 5 to 10 in. \$3.50  
 Arkansas Stone, No. 1, 10 to 15 in. \$4.00  
 Lily White Washita 4 to 8 in. 60¢  
 Rosy Red Washita 4 to 8 in. 60¢  
 Washita Stone, Extra, 4 to 8 in. 60¢  
 Washita Stone, No. 1, 4 to 8 in. 40¢  
 Washita Stone, No. 2, 4 to 8 in. 30¢  
 Lily White Slips..... 90¢  
 Rosy Red Slips..... 80¢  
 Washita Slips, Extra..... 50¢  
 Washita Slips, No. 1..... 70¢  
 India Oil Stones (entire list)..... 25¢

**Hindustan No. 1, Regular..... 30¢**  
**Turkey Oil Stones, ex. 5 to 10 in. \$8.00**  
**Queer Creek Stones, 4 to 8 in. 30¢**  
**Queer Creek Slips..... 90¢**  
**Sand Stone..... 50¢**  
**Belgian, German and Swaty Razor**  
**Natural Grit Carving Knife Hones..... 40¢**  
**Quick Edge Pocket Knife Hones..... 30¢**  
**Mounted Kitchen Sand Stone..... 1.50**  
**Tanite Mills:**  
 Emery Oil, per doz. \$5.00..... 50¢ @ 80¢

**Stoners—Cherry—**  
 Enterprise..... 25¢ @ 30¢

**Stops, Bench—**  
 Millers Falls..... 15¢ @ 10¢  
 Morrill's..... per doz. No. 1, \$10.00..... 50¢  
 Morrill's..... No. 2, \$12.50..... 50¢

**Stops, Window—**  
 Ives' Patent..... 25¢ @ 5¢

**Stove Boards—**  
 See Boards, Stove.  
**Stove Polish—See Polish, Stove.**

**Strainers, Pump—**  
 Diamond Joe Pump Strainers, per doz. 75¢

**Straps, Box—**  
 Cary's Universal case lots..... 30¢ @ 10¢

**Stretchers, Carpet—**  
 Cast Iron, Steel Points..... doz. 55¢ @ 65¢  
 Socket..... doz. \$1.75

**Strops, Razor—**  
 Smith & Hemenway Co..... 70¢

**Stuffers, Sausage—**  
 Enterprise Mfg. Co..... 25¢ @ 25¢  
 National Specialty Mfg. Co., list Jan.  
 1, '07..... 30¢

**Sweepers, Carpet—**  
 National Sweepers Co.:  
 Marion, Roller Bearing, full Nickel, \$24.00  
 Marion Queen, Roller Bearing, full  
 Nickel..... \$24.00  
 Monarch, Roller Bearing, Nickel..... \$22.00  
 Monarch, Roller Bearing, Jap. nickel..... \$20.00  
 Marion Queen, Roller Bearing, full  
 Nickel..... \$27.00  
 Transparent, Roller Bearing, Plate  
 Glass Top, Nickel..... \$27.00  
 Monarch Extra, Roller Bearing,  
 (17-inch case), Nickel..... \$36.00  
 Monarch Extra, Roller Bearing (17-  
 inch case), Japanned..... \$33.00  
 Perpetual, Regular Bearings, Nickel..... \$21.00  
 Perpetual, Regular Bearings, Jap. \$14.00

**Tacks Brads, &c.—**  
 List Jan. 15, '99.  
 Carpet Tacks, American 90¢ @ 75¢  
 American Cut Tacks..... 90¢ @ 80¢  
 Sneed's Iron Tacks..... 90¢ @ 80¢

**Swedes Upholsterers' Tacks..... 90¢ @ 10¢**  
**Gimp Tacks..... 90¢ @ 10¢**  
**Lace Tacks..... 90¢ @ 10¢**  
**Trimmers' Glass Tacks..... 90¢ @ 10¢**  
**Looking Glass Tacks..... 70¢ @ 10¢**  
**Bill Posters' and Railroad Tack..... 90¢ @ 10¢**

**Hungarian Nails..... 30¢ @ 15¢**  
**Common and Patent Brads..... 30¢ @ 10¢**  
**Trunk and Clout Nails..... 30¢ @ 5¢**

**NOTE.—The above prices are for  
 straight weights. An extra 5¢ is given  
 Star Weights and an extra 10¢ 1/2 on  
 Standard Weights.**

**Miscellaneous—**  
 Double Point Tacks..... 90¢ @ 10¢ or 7 tens  
 Steel Wire Brads, R. & E. Mfg.  
 Co.'s list..... 50¢ @ 10¢ @ 60¢  
 See also Nails, Wire.

**Tanks, Oil—**  
 Emerald, S. S. & Co..... 30-gal. \$3.30  
 Emerald, S. S. & Co..... 60-gal. \$4.00  
 Queen City S. S. & Co., 30-gal..... \$3.50  
 Queen City S. S. & Co., 60-gal..... \$4.25

**Tapes, Measuring—**  
 American Asses' Skin..... 40¢ @ 10¢ @ 50¢  
 Patent Leather..... 35¢ @ 5¢  
 Steel..... 40¢ @ 10¢ @ 5¢  
 Chesterman's..... 40¢ @ 10¢ @ 5¢  
 Eddy's Steel..... 35¢ @ 10¢ @ 5¢  
 Keuffel & Esser Co., Steel and Metallic  
 Lower list, 1899..... 35¢  
 Lufkin's Steel..... 35¢ @ 10¢ @ 5¢  
 Lufkin's Metallic..... 30¢ @ 10¢ @ 5¢

**Teeth Harrow—**  
 Steel Harrow Teeth, plain or head-  
 ed, bas. per lb..... 24¢

**Thermometers—**  
 Tin Case..... 80¢ @ 10¢ @ 10¢ @ 5¢

**Ties, Bale—Steel.**  
 Single Loop..... 75¢  
 Other Styles..... 70¢

**Ties, Wall—**  
 Cleveland Wire Spring Co.:  
 Galv. Steel 5-32 x 8 1/4 in. per 1000 \$10.00  
 Galv. Steel 5-32 x 8 1/4 in. per 1000 \$11.00  
 Galv. Steel 5-32 x 1 1/4 in. per 1000 \$12.00  
 Galv. Steel 5-32 x 1 1/4 in. per 1000 \$14.00

**Tinners' Shears, &c.—**  
 See Shears, Tinners', &c.

**Tinware—**  
 Stamped, Japanned and Placed, sold  
 very generally at net prices.

**Tire Benders, Upsetters,  
 &c.—See Benders and Upset-  
 ters, Tire.**

**Tobacco Cutters—**  
 See Cutters, Tobacco.

**Tools—Coopers'—**  
 L. & I. J. White..... 20¢ @ 20¢ @ 5¢

**Atkins' Cross Cut Saw Tools..... 40¢**  
**Simonds' Improved..... 33¢**  
**Simonds' Crescent..... 25¢**

**Ship—**  
 L. & I. J. White..... 25¢

**Transom Lifters—**  
 See Lifters, Transom.

**Traps—Fly—**  
 Balloon, Globe or Acme.....  
 doz. \$1.15 @ 1.25; gro. \$11.50 @ 12.00  
 Harper, Champion or Paragon  
 doz. \$1.25 @ 1.40; gro. \$13.00 @ 13.50

**Game—**  
 Onida Pattern..... 75¢ @ 10¢ @ 5¢  
 Newhouse..... 45¢ @ 15¢  
 Hawley & Norton..... 65¢ @ 5¢ @ 10¢  
 Victor (Onida Pattern)..... 75¢ @ 75¢  
 Star (Blake Pattern)..... 60¢ @ 5¢ @ 10¢

**Mouse and Rat—**  
 Mouse, Wood, Choker, doz. holes..... 8 1/2¢ @ 9¢

**Mouse, Round or Square Wire.....**  
 doz. \$0.85 @ 1.00

**American Pattern French Rat and Mouse  
 Trap:**  
 No. 1, Detroit Marty Pattern, per doz.  
 \$4.50; in 1/2 gro. lots, per doz. \$4.00  
 No. 2, Detroit Marty Pattern, per doz.  
 \$2.25; in 1/2 gro. lots, per doz. \$2.00  
 Detroit Marty Pattern Mouse, per doz.  
 \$2.00; in 1/2 gro. lots, per doz. \$1.75  
 Diamond Joe Rat Traps..... per doz. 60¢  
 Diamond Joe Rat Traps..... per doz. 80¢  
 Marty French Rat and Mouse Traps  
 (Genuine):  
 No. 1, Rat, Each \$1.12 1/2; per doz. \$12.00  
 No. 3, Rat, per doz. \$6.00; case of 50  
 \$5.25 doz.  
 No. 3 1/2, Rat, per doz. \$4.75; case of 50  
 \$4.25 doz.  
 No. 4, Mouse, per doz. \$3.50; case of 75  
 \$2.75 doz.  
 No. 5, Mouse, per doz. \$2.75; case of 150  
 \$2.25 doz.

**Schuyler's Rat Killer, No. 1, per gr. \$3.00;  
 No. 2, per gr. \$3.00; Mouse, No. 3,  
 \$18.00..... 50¢**

**Target—**  
 Markle's, each..... \$5.50

**Trimmers, Spoke—**  
 Bonney's Nos. 1 and 2..... 40¢

**Trowels—**  
 Diaston Brick and Pointing..... 30¢  
 Diaston Plastering..... 25¢  
 Diaston "Standard Brand" and Gar-  
 den Trowels..... 40¢  
 Never-Break Steel Garden Trowels.....  
 gro. \$7.00

**Peace's Plastering..... 30¢**  
**Rose Brick and Plastering..... 25¢**  
**Woodrough & McParlin, Plastering..... 25¢**

**Trucks, Warehouse, &c.—**  
 B. & L. Block Co.'s list..... 50¢  
 Daisy Stove Trucks, Improved pattern  
 per doz. \$18.50  
 Radet Stove Trucks..... per doz. \$18.50

**Tubs, Wash—**  
 No. 1 3 5  
 Galvanized, per doz. \$5.00 5.50 6.00  
 Galvanized Wash Tubs (S. & Co.):  
 No. 1 2 3 10 20 30  
 Per doz. \$5.25 6.00 6.75 6.50 7.25 8.00

**Twine—**  
**Miscellaneous—**  
**Flax Twine—**  
 No. 3, 3/4 and 1/2-lb. Balls..... 25¢  
 No. 15, 3/4 and 1/2-lb. Balls..... 18¢  
 No. 18, 3/4 and 1/2-lb. Balls..... 18¢  
 No. 24, 3/4 and 1/2-lb. Balls..... 17¢  
 No. 36, 3/4 and 1/2-lb. Balls..... 17¢  
 Chalk Line, Cotton, 1/2-lb. Balls..... 22¢ @ 25¢

**Cotton Mops, 6, 9, 12 and 15 lb. 10  
 doz..... 7¢ @ 8¢**  
**Cotton Wrapping, 5 Balls to lb.....**  
 according to quality..... 10¢ @ 17¢

**American 3-Ply Hemp, 1/4 and 1/2-lb.  
 Balls..... 13¢ @ 14¢**  
**American 3-Ply Hemp, 1-lb. Balls.....**  
 13¢ @ 14¢

**India 2-Ply Hemp, 1/4 and 1/2-lb.  
 Balls (Spring Twine)..... 8¢**  
**India 3-Ply Hemp, 1-lb. Balls..... 8¢**  
**India 3-Ply Hemp, 1 1/2-lb. Balls..... 7¢**  
**2, 3, 4 and 5-Ply Jute, 1/2-lb. Balls.....**  
 9¢ @ 10¢

**Mason Line, Linen, 1/2-lb. Balls..... 45¢**  
**No. 264 Mattress, 3/4 and 1/2-lb. Balls..... 37¢**  
**Wool, 3 to 6 ply..... 50¢**

**Vises—**  
 Solid Box..... 50¢ @ 50¢ @ 10¢

**Parallel—**  
 Athol Machine Co.:  
 Simpson's Adjustable..... 40¢  
 Standard..... 40¢  
 Amateur..... 40¢  
 Bonney's..... 40¢  
 Columbian Hdw. Co..... 40¢  
 Fisher & Norris Double Screw..... 15¢ @ 10¢  
 Hollands'..... 40¢  
 Machinists'..... 40¢  
 Revestons..... 20¢ @ 30¢  
 Lewis Tool Co..... 20¢ @ 30¢  
 Massey's Perfect..... 15¢ @ 20¢  
 Massey's..... 30¢ @ 40¢  
 Clincher..... 40¢  
 Combination, Quick Adj..... 40¢  
 Woodworker's..... 15¢ @ 20¢  
 Merrill's Falls..... 50¢ @ 10¢ @ 10¢  
 Parker's:  
 Victor..... 20¢ @ 25¢  
 Regulars..... 20¢ @ 25¢  
 Vulcan..... 40¢ @ 45¢  
 Combination Pipe..... 45¢ @ 50¢  
 Prentiss..... 20¢ @ 25¢  
 Sargent's..... 40¢  
 Sneliker's X..... 20¢ @ 25¢  
 Stephens'..... 20¢ @ 25¢

**Saw Filers—**  
 Bonney's No. 1, \$1.13; No. 3, \$1.16..... 60¢  
 Diaston's D 3 Clamp and Guide, per doz.  
 \$3.00..... 60¢  
 Reading..... 20¢ @ 60¢  
 Wentworth's Rubber Jaw, Nos. 1, 2  
 and 3..... 45¢ @ 50¢

**Miscellaneous—**  
 Signal & Keeler Combination Pipe  
 Vise..... 60¢  
 Parker's Combination Pipe:  
 87 Series..... 60¢  
 187 Series..... 60¢ @ 5¢  
 No. 870..... 40¢

**Wads—Price Per M.**  
 B. E., 11 up..... 60¢  
 B. E., 9 and 10..... 70¢  
 B. E., 8..... 80¢  
 B. E., 7..... 80¢  
 P. E., 11 up..... \$1.00  
 P. E., 9 and 10..... 1.25  
 P. E., 8..... 1.50  
 P. E., 7..... 1.50  
 Ely's B. E., 11 and larger..... \$1.70 @ 1.75  
 Ely's P. E., 12 to 20..... \$3.00 @ 3.45

**Wagon Jacks—**  
 See Jacks, Wagon.

**Ware, Hollow—**  
 Aluminum—  
 S. S. & Co. Reduced List..... 40¢

**Cast Iron, Hollow—**  
 Stove Hollow Ware:  
 Ground..... 65¢  
 Unground..... 70¢  
 White Enameled Ware:  
 Mainline Kettles..... 75¢ @ 10¢ @ 5¢ @ 80¢  
 Covered Ware:  
 Tinned and Turned..... 40¢ @ 10¢ @ 10¢ @ 5¢  
 Enameled and Plain..... 50¢ @ 10¢ @ 10¢ @ 5¢  
 See also Pots, Glue.

**Enameled—**  
 Agate Nickel Steel Ware, list Nov. 1,  
 '01..... 50¢ @ 30¢  
 Iron Clad Ware..... 70¢ @ 10¢  
 Never-Break Enameled..... 50¢ @ 5¢ @ 10¢

**Tea Kettles—**  
 Galvanized Tea Kettles:  
 Inch..... 6 7 8 9  
 Each..... 45¢ 50¢ 55¢ 65¢

**Steel Hollow Ware.**  
 Avery Spiders & Griddles..... 65¢ @ 5¢ @ 5¢  
 Avery Kettles..... 60¢  
 Porcelain..... 50¢ @ 5¢ @ 10¢  
 Never-Break Spiders and Griddles..... 65¢ @ 5¢  
 Never-Break Kettles..... 60¢  
 Solid Steel Spiders & Griddles..... 65¢ @ 5¢  
 Solid Steel Kettles..... 60¢  
 Solid Steel Ware, Enameled..... 50¢ @ 5¢

**Washboards—**  
 Solid Zinc:  
 Crescent, family size, bent frame, \$3.00  
 Red Star, family size, stationary  
 protector..... \$3.00  
 Double Zinc Surface:  
 Saginaw Globe, family size, station-  
 ary protector..... \$2.65  
 Cable Cross, family size, stationary  
 protector..... \$2.90  
 Single Zinc Surface:  
 Naind, family size, open back perfo-  
 rated..... \$2.40  
 Saginaw globe, protector, family  
 size, ventilated back..... \$2.95



Combination Bright.....	40c
Cylinder or Gas Pipe.....	55c
Extra Heavy.....	45c
Merrick's Fattern.....	50c
No. 3 Pipe, Bright.....	53c
Bindley Automatic.....	30c
Boardman's.....	35c
Bohler's.....	40c
Coe's' Mechanic.....	\$1.08 10c 7c
Donohue's Engineer.....	40c 10c
Eagle.....	50c 10c
Eldon Wrenches.....	40c
Eldon Monkey Wrench Pipe Jaws.....	33c
Gem Pocket.....	30c
Horn.....	70c
Knife Hole, Case lots.....	50c 10c
Case lots.....	50c 10c
Less than case lots.....	50c 5c
Improved Pipe (W & B).....	6c
Self Handles, P. S. & W.....	50c 50c 10c
Stills.....	65c
Triumph.....	60c 10c
Vulcan Chisel.....	9c
<b>Wrought Goods</b>	
Staples, Hooks, &c., list March 17	
".....	90c 90c 10c
<b>Yokes Neck—</b>	
Covered Saddle Works, Trimme.....	1.60 3c
Cover 3 Saddle Works, Neck Yoke	
Centers.....	70c
<b>Yokes, Ox, and Ox Bows</b>	
Fort Madison's Farmers & Freighters'.....	list net
<b>Zinc—</b>	
Sheet.....	lb 6c 6c 6c

Lined, Clay, boiled.....	65	@63
Lined, Slate and West'n raw, red.....	62	@61
Lined, raw Calcutta, see 1.....	85	@85
Lard, Prime.....	77	@78
Lard, Extra No. 1.....	59	@60
Lard, No. 1.....	52	@53
Cotton-seed, Crude.....	66	@66
prime.....	42½	@43
Cotton-seed, Summer Yellow.....		
off grades.....	41	@41½
Sperm, Crude.....	60	@60
Sperm, Natural Spring.....	71	@72
Sperm, Bleached Spring.....	74	@76
Sperm, Bleached Light Strained.....	75	@77
Sperm, Bleached Winter.....	78	@79
Tallow, Prime.....	60	@62
Whale, Crude.....	66	@66
Whale, Natural Winter.....	46	@47
Whale, Bleached Winter.....	48	@49
Menhaden, Crude, Sound.....	35	@35
Menhaden, Light Strained.....	32	@33
Menhaden, Bleached Winter.....	34	@35
Menhaden, Cy Bleached Winter.....	38	@39
Cocoonut, Fexon.....	74	@74
Cocoonut, Cocoin.....	84	@84
Cod, Domestic.....	33	@34
Cod, Newfoundland.....	36	@40
Red Elaine.....	66	@66
Red Saponified.....	69	@69
Olive, Italian, bbis.....	54	@57
Neatsfoot, prime.....	57	@58
Palm, prime, Lagos.....	54	@60

## Mineral Oils.

Black, 20 gravity, 25330 soil test.....	94	@104
Black, 39 gravity, 15coid test.....	10½	@11½
Black, summer.....	91	@91
Cylinder, light filtered.....	144	@154
Cylinder, dark filtered.....	114	@124
Paraffine, 903-907 gravity.....	124	@124
Paraffine, 911 gravity.....	114	@114
Paraffine, 913 gravity.....	114	@114
Paraffine, red, No. 1.....	134	@134

In small lots 1½ advance.

ENTERED AT THE POST OFFICE, NEW YORK, AS SECOND-CLASS MATTER

